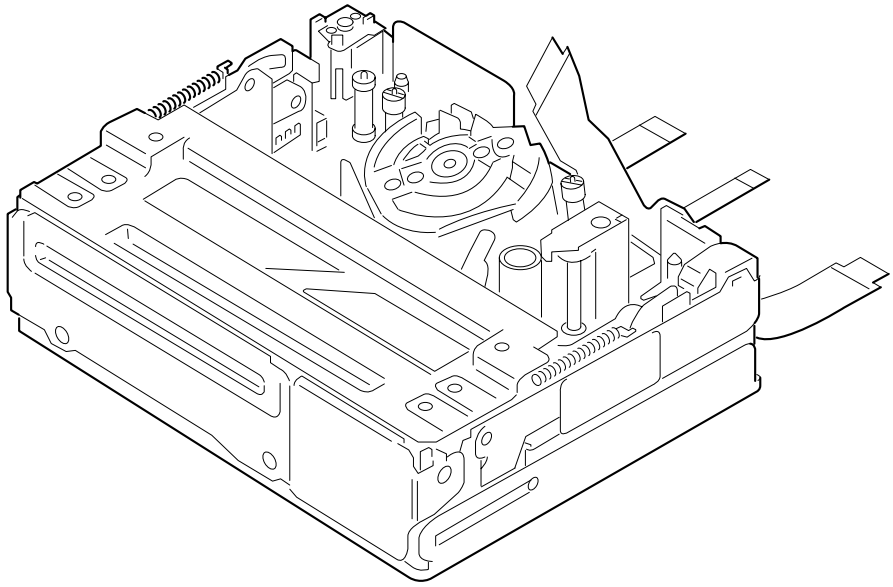
DV MECHANICAL ADJUSTMENT MANUAL VII

Ver 1.0 2003. 01

Z MECHANISM

Mini DV Digital Video Cassette

Please use this manual with the service manual of the respective models.



The capstan motor and the drum base block assy of this mechanism require very high precision work to install them in the mechanism. Therefore, the capstan motor and the drum base block assy are not supplied as the repair part independently. They are supplied as MD (Z100) SUB block assy.

Digital MECHANISM DECK

SONY

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1. Preparations for Check, Adjustment and Replacement of Mechanism Block

- Refer to the "DISASSEMBLY" section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When making any adjustment to a mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section "2-5. Mode Selector II" for details on how to enter the mode shown in a rectangle [____] mode in subsequent paragraphs of this manual.

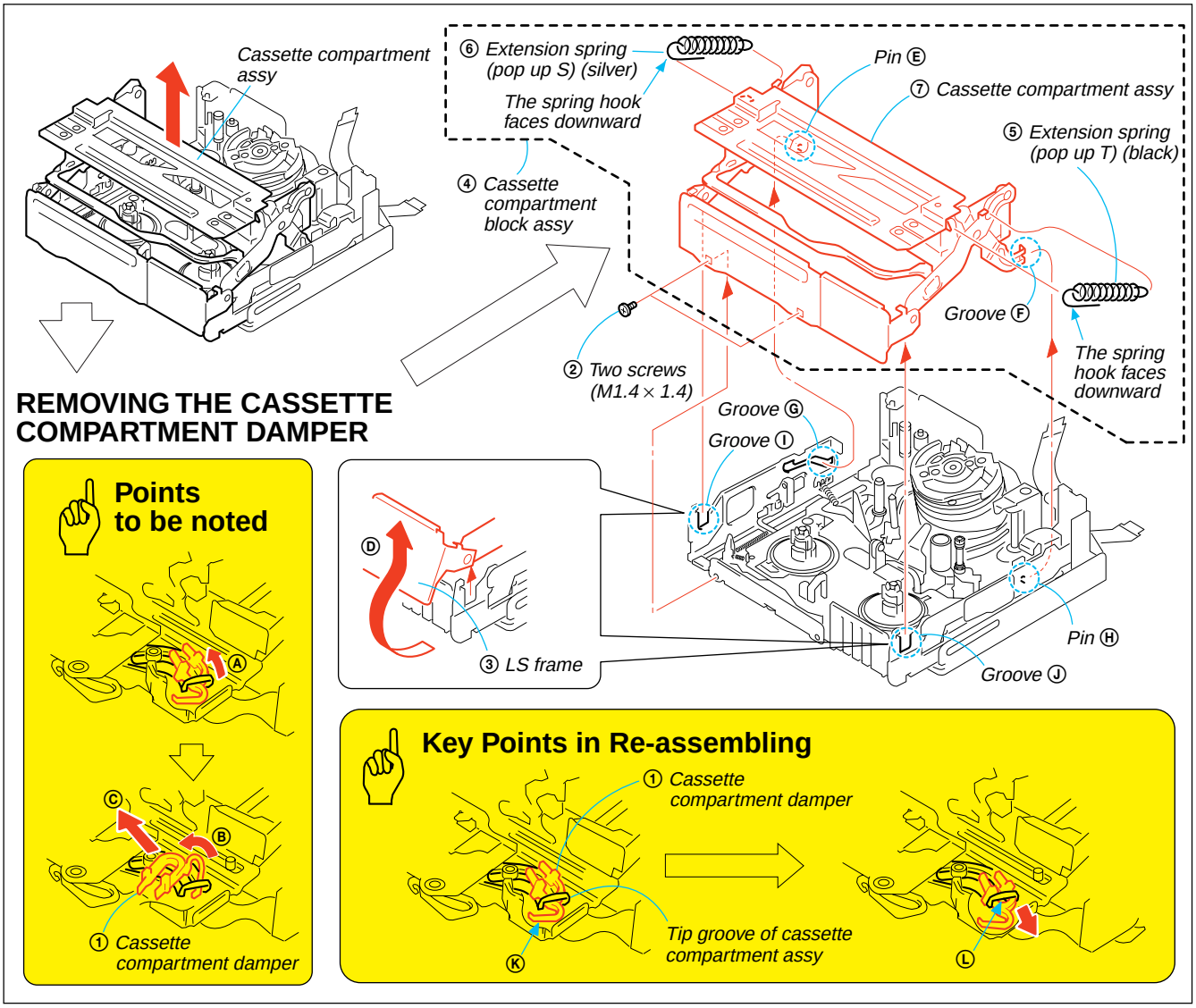
1-1. Cassette Compartment Assy, Damper Assy

1. Removal procedure

1) Set the [EJ] mode.
2) Press the cassette compartment down halfway. Pull the cassette compartment damper ① in the direction of the arrow Ⓐ. Then rotate it in the Ⓑ direction, and remove it in the direction of Ⓒ.
3) Remove the two screws (special head screw M1.4 × 1.4) ②.
4) Remove the LS chassis block assy ③ in the direction of the arrow Ⓓ.
5) Remove the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ from the LS chassis groove Ⓖ and pin Ⓗ. Then remove the cassette compartment block assy ④.
6) Remove the tension spring (POP UP T) (black) ⑤.
7) Remove the tension spring (POP UP S) (silver) ⑥.Then remove the cassette compartment assy ⑦.

2. Attachment procedure

1) Set the [ULE] mode.
2) Install the tension spring (cassette compartment S) (POP UP S) (silver) ⑥ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
3) Install the tension spring (cassette compartment T) (POP UP T) (black) ⑤ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
4) Install the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ into the LS chassis groove Ⓖ and pin Ⓗ.
5) In the status that the LS block assy ③ is kept open, insert it into the grooves Ⓘ and Ⓙ of the LS chassis block assy.
6) Close the LS chassis block assy ③ in the direction opposite to the arrow Ⓓ, and install it with the two screws (special head screw M1.4 × 1.4) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) The cassette compartment down halfway. Pass the Ⓚ portion of the cassette compartment damper ① through the groove at the tip of the cassette compartment. Then pull the Ⓛ portion and fix it using tweezers or something.



2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning (Refer to Fig. 2-1.)

1) Set the EJECT state. Clean the tape running path (TG-1, -2, -3, -4, -5, -6 and -7, pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. J-3) moistened with cleaning fluid.

Note 1: Be careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. J-3).
Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.
Note 3: When cleaning the capstan shaft, be carefull not to move the oil seal. If the oil seal is moved, oil will leak.

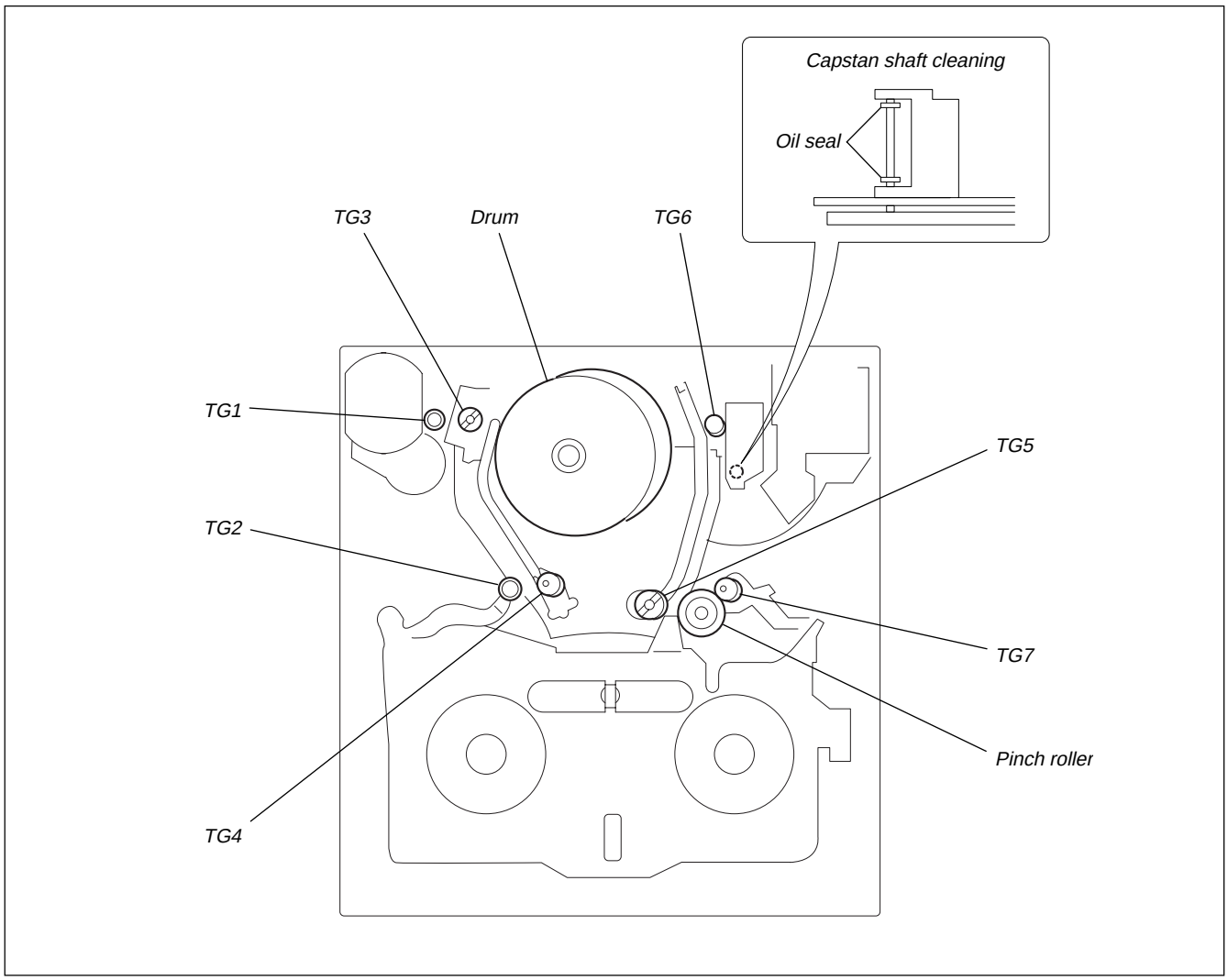


Fig. 2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Capstan bearing	—	☆	—	☆	—	☆	—	☆	—	☆	
Drive mechanism	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
Performance check	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note 1: When the machine is overhauled, replace the parts referring to the above list.

Note 2: Grease

- Be sure to use the specified grease only. (If grease of different viscosity is used, it can cause various troubles.)
- The grease must not contain any dust or other matter. (otherwise it can cause various trouble.)
- Observe the noted amount of grease. (otherwise the oozed grease can cause troubles.)
- Suncall FG-87HSR

2-4. Service Jigs and Tools

Ref. No.	Name	Part code	Jig inscription	Used for
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Wiping cloth	7-741-900-53		
J-3	Super-fine applicator (made by Nippon Applicator (P752D))	—		
J-4	Mirror (small oval type)	J-6080-840-A	GD-2038	Tape path
J-5	Tracking tape (XH2-1) (NTSC, PAL)	8-967-997-01		Tape path
J-6	Mini DV torque cassette	J-6082-360-A		
J-7	FWD/BACK T adjustment screwdriver	J-6082-187-A		For TG2 FWD position adjustment
J-8	Torque screwdriver	J-9049-330-A		
J-9	Tape path screwdriver	J-6082-026-A		For tape path adjustment
J-10	Adjustment remote commander (RM-95 upgraded)	J-6082-053-B		
J-11	Mode Selector II	J-6082-282-B		General adjustment (ROM version 1.8)
J-12	Mode Selector II conversion board (Z)	J-6082-493-A		
J-13	Mode Selector II ROM (supporting Z mechanism) * Note 1	J-6082-314-G		ROM for Mode Selector II

Other required equipment: Oscilloscope

Note 1: This is the ROM used for upgrading the version of Mode Selector II to enable it to be used for the Z mechanism.

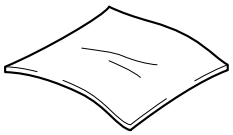
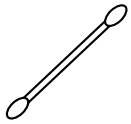
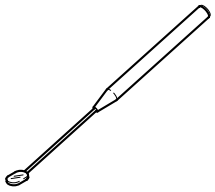
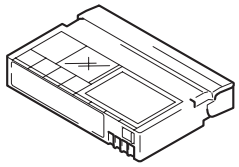
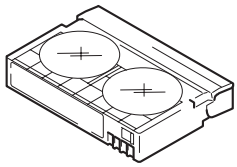
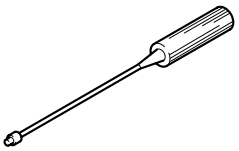
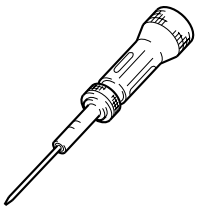
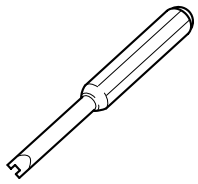
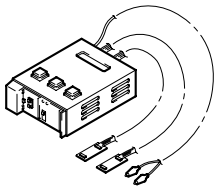
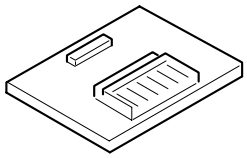
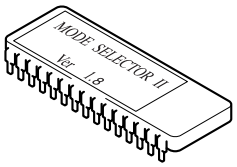
J-1	***J-2*** 	***J-3*** 	***J-4*** 	***J-5*** 
J-6 	***J-7*** 	***J-8*** 	***J-9*** 	***J-10***
J-11 	***J-12*** 	***J-13*** 		

Fig. 2-2

2-5. Mode Selector II Operating Procedure

2-5-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the "NG" indication appears and the mechanism stops moving.

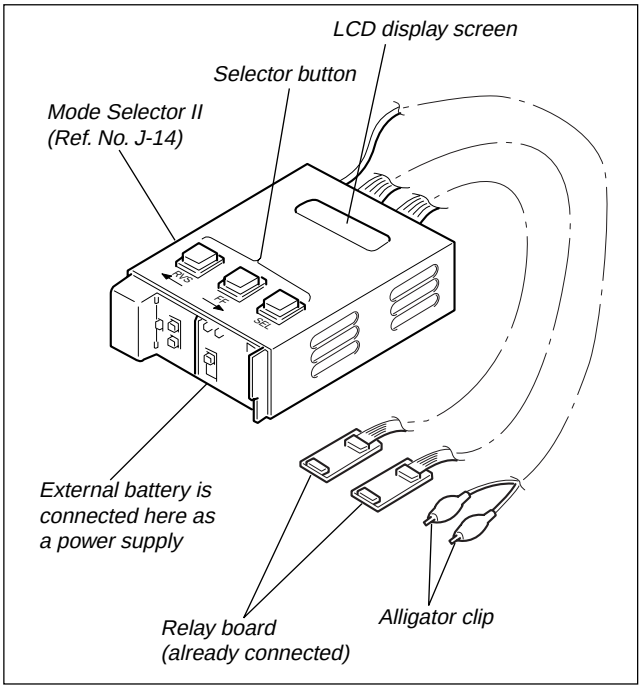


Fig. 2-3

Mode Selector II (J-6082-282-B) connection diagram

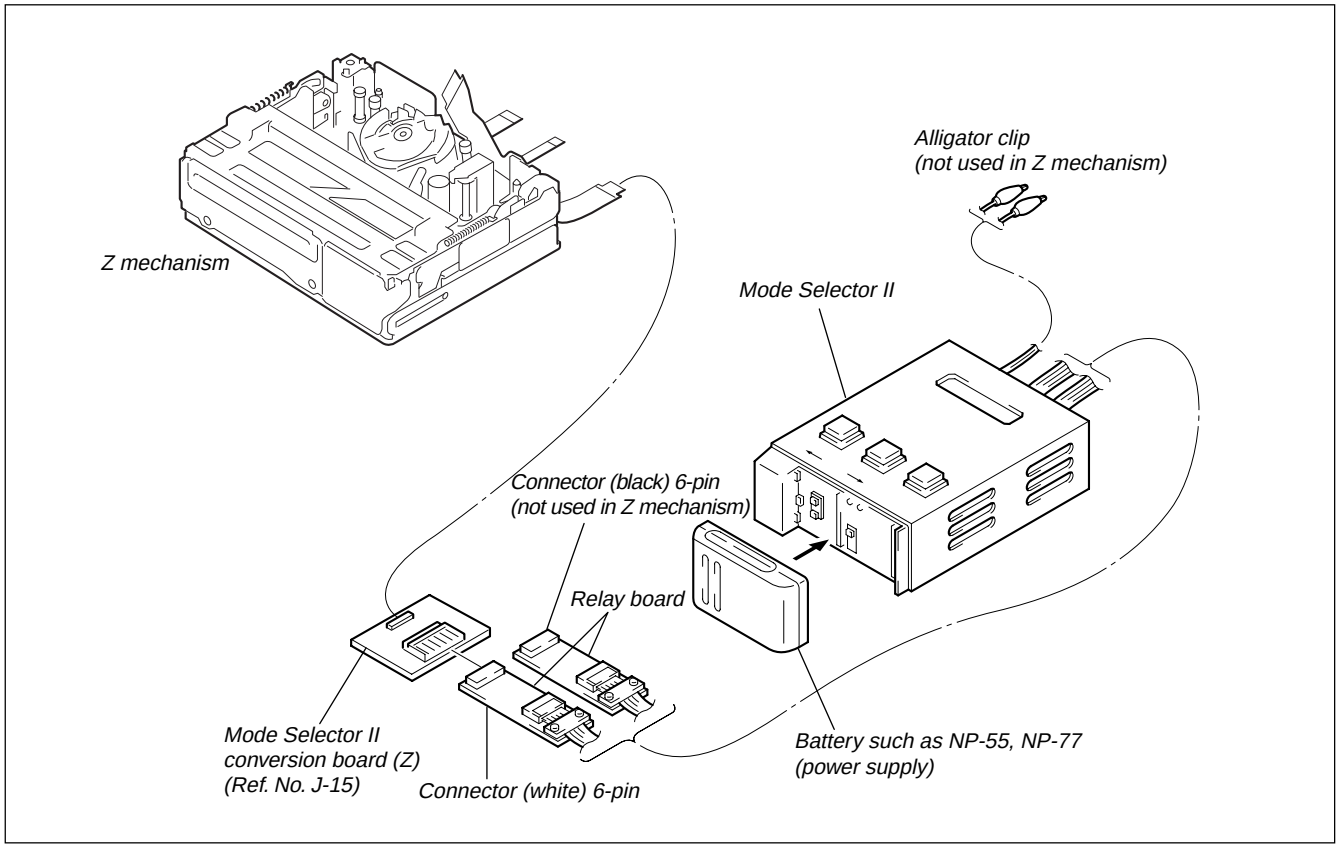
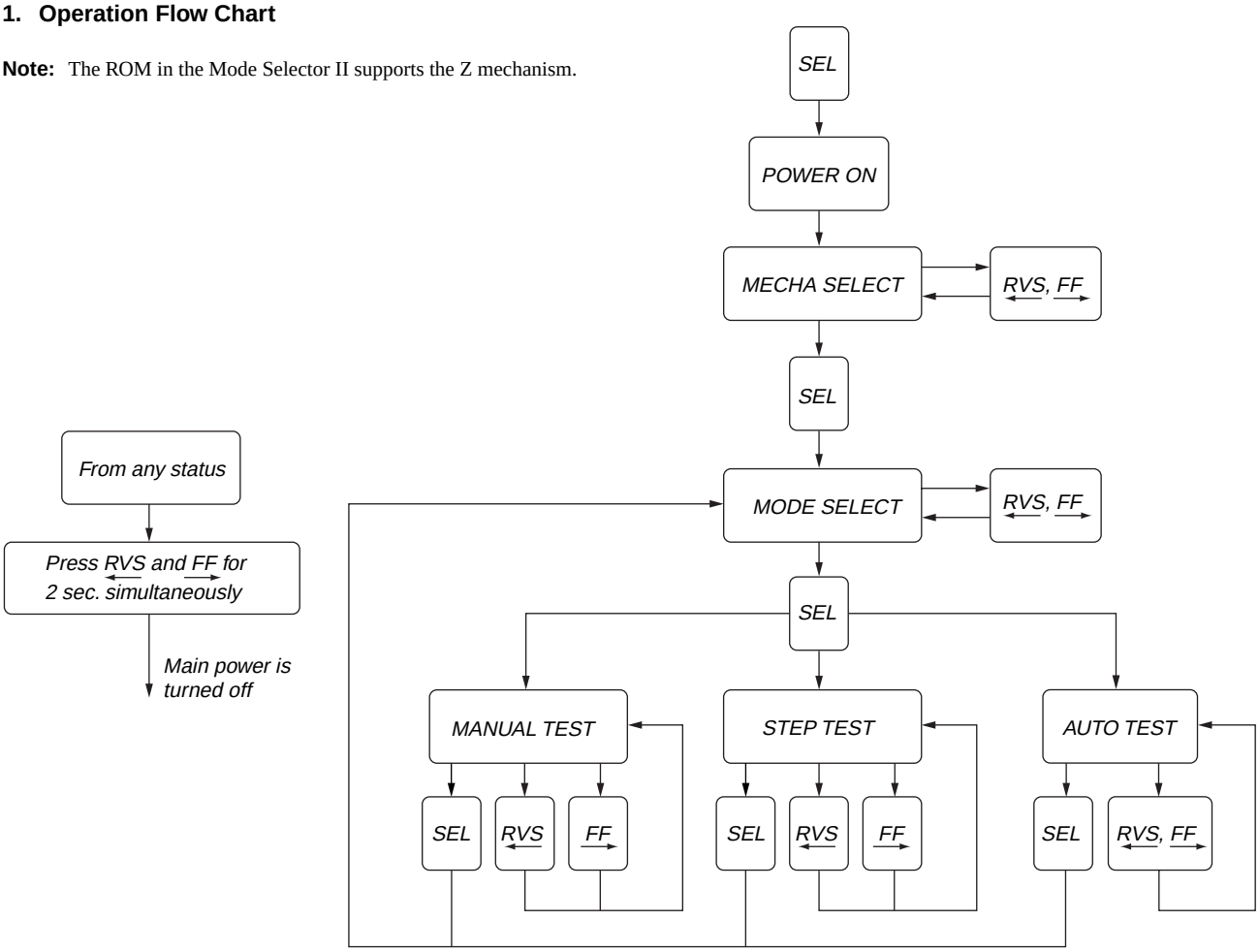


Fig. 2-4

2-5-2. Operation

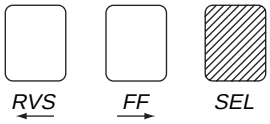
1. Operation Flow Chart

Note: The ROM in the Mode Selector II supports the Z mechanism.



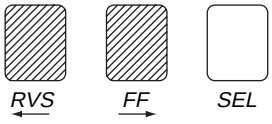
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the Z mechanism.)

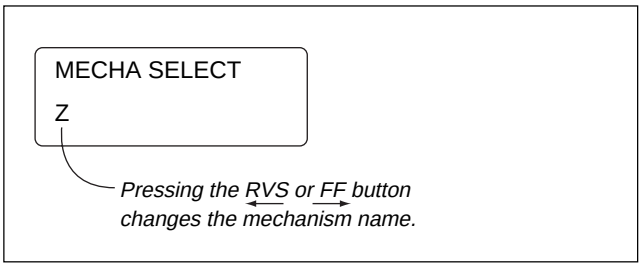


Fig. a

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of "MANUAL", "STEP" and "AUTO". Selection is complete when the SEL button is pressed.

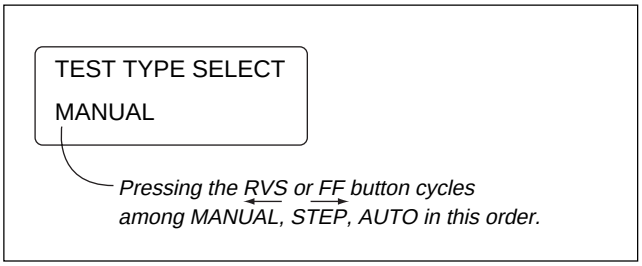


Fig. b

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

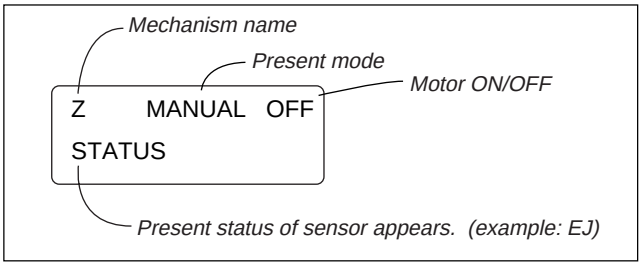


Fig. c

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

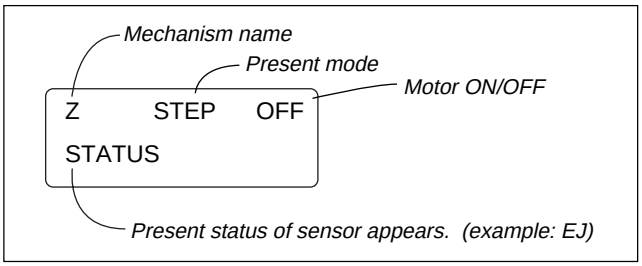


Fig. d

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

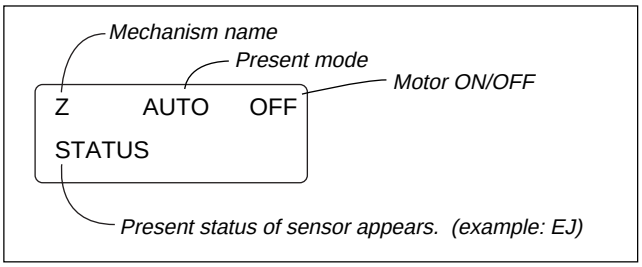


Fig. e

2-5-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the RVS or FF button. (The selected status appears on STATUS.)
EJ⟷ULE⟷SR⟷HL⟷STOP⟷R/P

MD name / Code				Z Mechanism
A	B	C		
0	1	0	1	EJ
1	1	0	2	ULE
1	0	0	3	SR
1	0	1	4	HL
0	0	1	5	STOP
0	1	1	6	R/P

2-5-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.

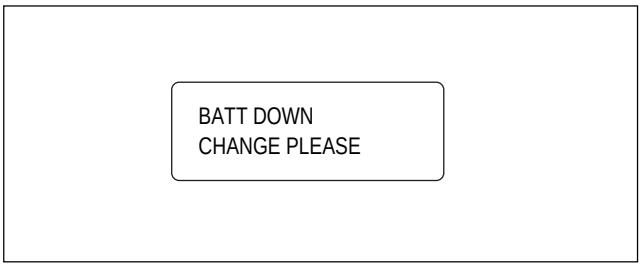
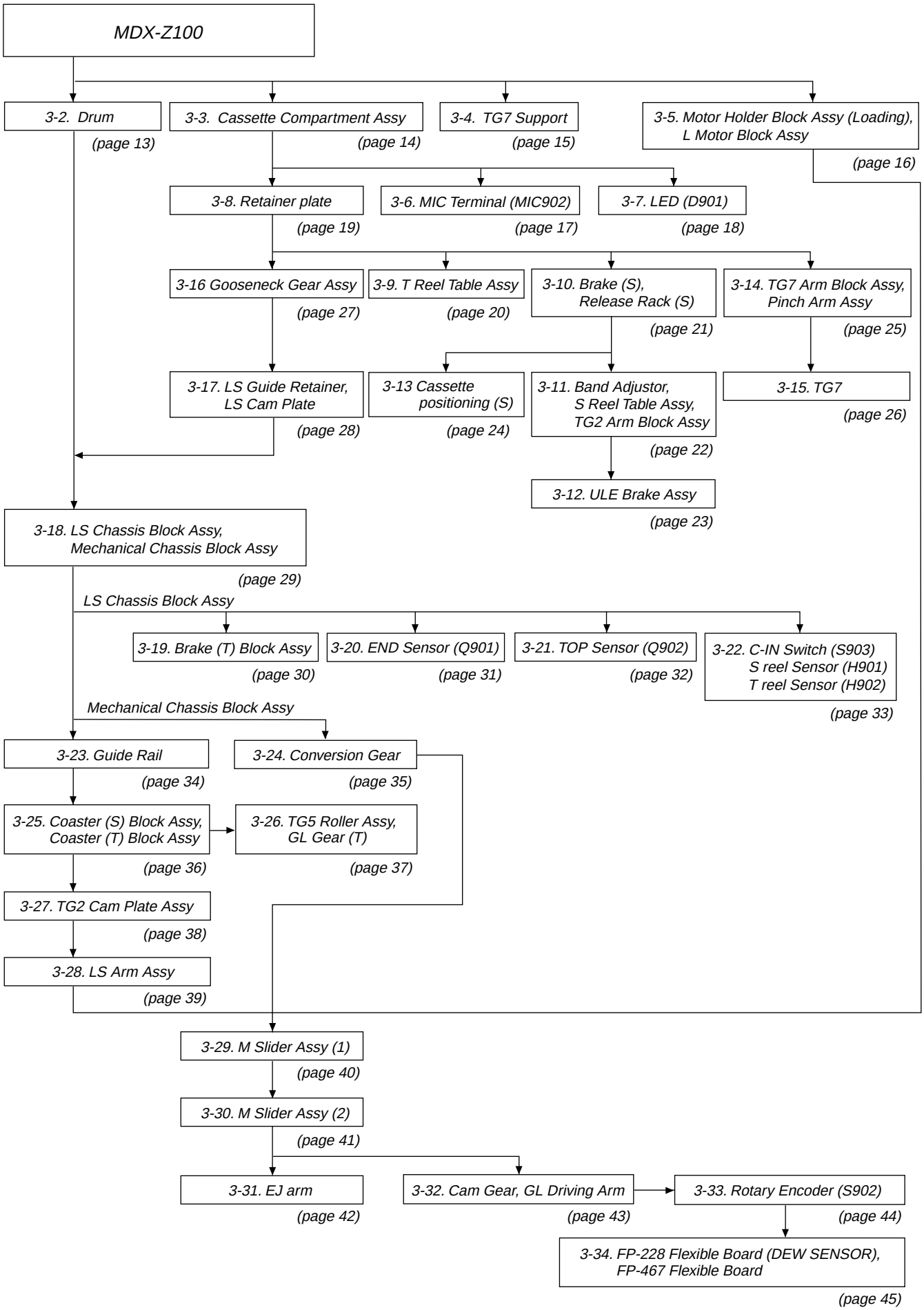


Fig. f

3. Check, Adjustment and Replacement of Mechanical Parts

3-1. Flowchart of Replacement of Mechanical Parts



3-2. Drum

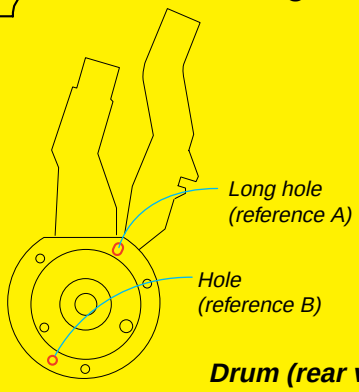
1. Removal procedure

1) Remove head drum flexible board Ⓒ from the notch of the mechanical chassis block assy.
2) Remove the drum fixing screw (M1.4 × 1.3) ① and remove the drum assy ②.

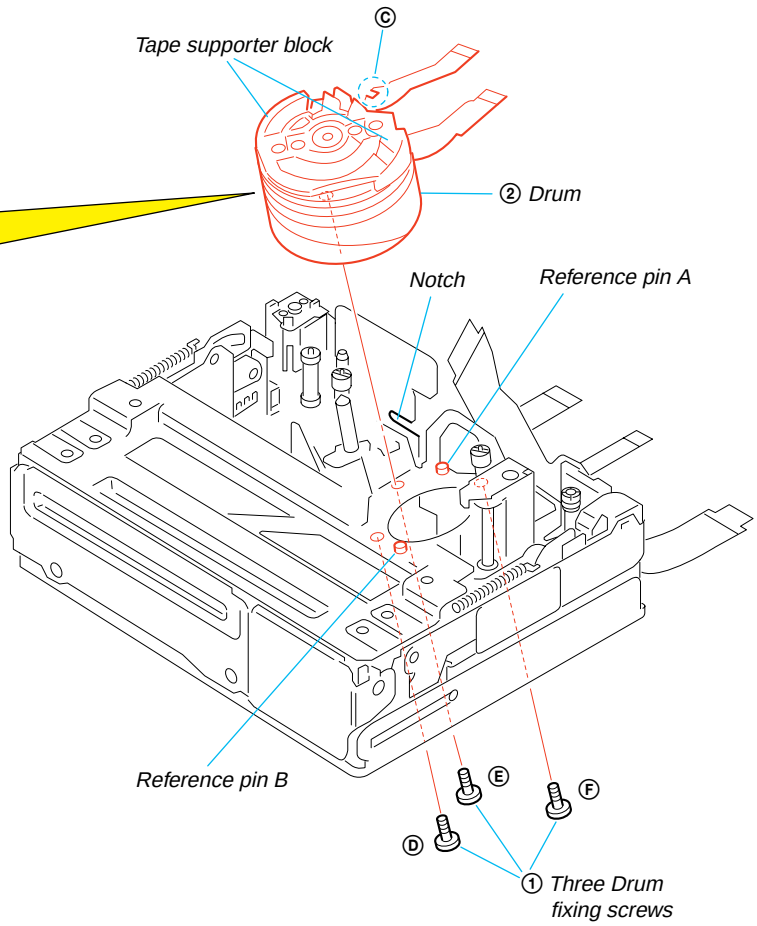
2. Attachment procedure

1) Ensure that head drum fixible board is hooked on the tape supporter block.
2) Hold the tape-supporter block of the drum ② and insert the drum flexible board into the mechanical chassis block assy.
3) Insert the two reference holes A and B of the drum into the reference pins A and B of the drum base assy.
4) Hook the flexible board Ⓒ portion on the notch.
5) Install the three drum fixing screws (M1.4 × 1.3) ① in the order starting from Ⓓ, then Ⓔ, and finally Ⓕ. Then tighten the screws.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
   Return Ⓔ 120°, then apply the screw locking paint (Neji lock).
6) Clean the drum by referring to section2-1.
7) Perform the tape path adjustment. (Refer to “4-4. Tape Path Adjustment”.)

Key Points in Re-assembling

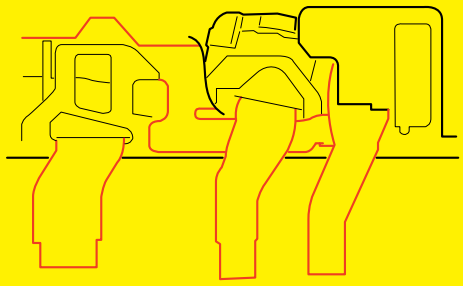


Drum (rear view)



Drum Flexible Board Processing

Key Points in Re-assembling



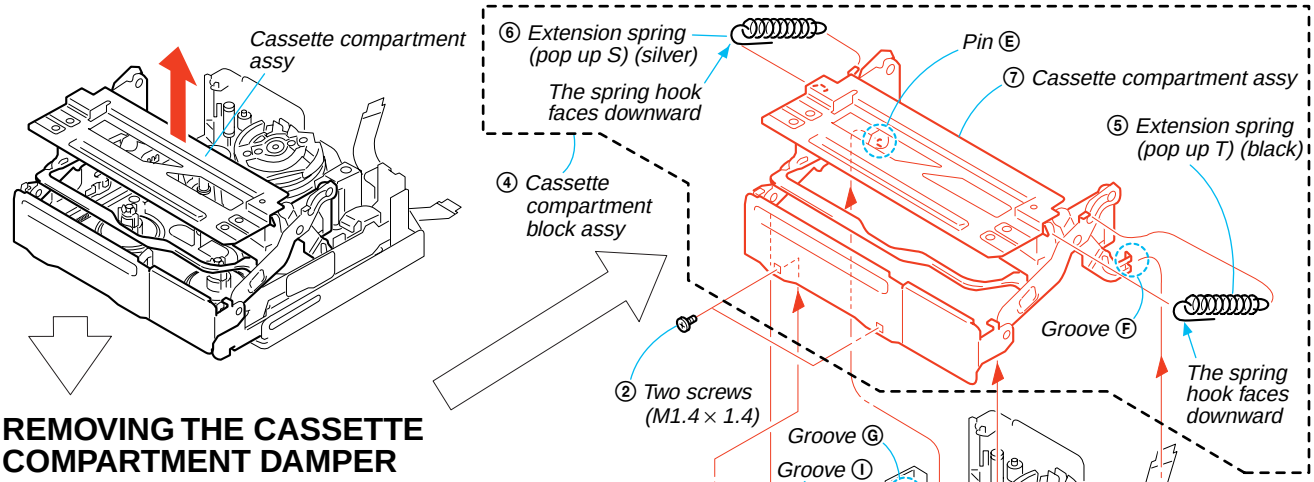
3-3. Cassette Compartment Assy

1. Removal procedure

1) Set the [EJ] mode.
2) Press the cassette compartment down halfway. Pull the cassette compartment damper ① in the direction of the arrow Ⓐ. Then rotate it in the Ⓑ direction, and remove it in the direction of Ⓒ.
3) Remove the two screws (special head screw M1.4 × 1.4) ②.
4) Remove the LS chassis block assy ③ in the direction of the arrow Ⓓ.
5) Remove the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ from the LS chassis groove Ⓖ and pin Ⓗ. Then remove the cassette compartment block assy ④.
6) Remove the tension spring (POP UP T) (black) ⑤.
7) Remove the tension spring (POP UP S) (silver) ⑥.Then remove the cassette compartment assy ⑦.

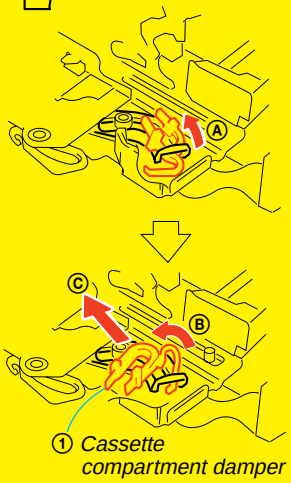
2. Attachment procedure

1) Set the [ULE] mode.
2) Install the tension spring (cassette compartment S) (POP UP S) (silver) ⑥ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
3) Install the tension spring (cassette compartment T) (POP UP T) (black) ⑤ in to the cassette compartment assy ⑦. (The spring should be hooked on the front stay with the spring end facing upward.)
4) Install the pin Ⓔ and groove Ⓕ of the cassette compartment assy ④ into the LS chassis groove Ⓖ and pin Ⓗ.
5) In the status that the LS block assy ③ is kept open, insert it into the grooves Ⓘ and Ⓙ of the LS chassis block assy.
6) Close the LS chassis block assy ③ in the direction opposite to the arrow Ⓓ, and install it with the two screws (special head screw M1.4 × 1.4) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) The cassette compartment down halfway. Pass the Ⓚ portion of the cassette compartment damper ① through the groove at the tip of the cassette compartment. Then pull the Ⓛ portion and fix it using tweezers or something.

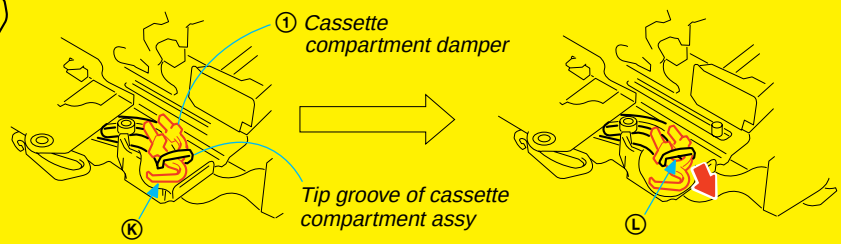


REMOVING THE CASSETTE COMPARTMENT DAMPER

Points to be noted



Key Points in Re-assembling



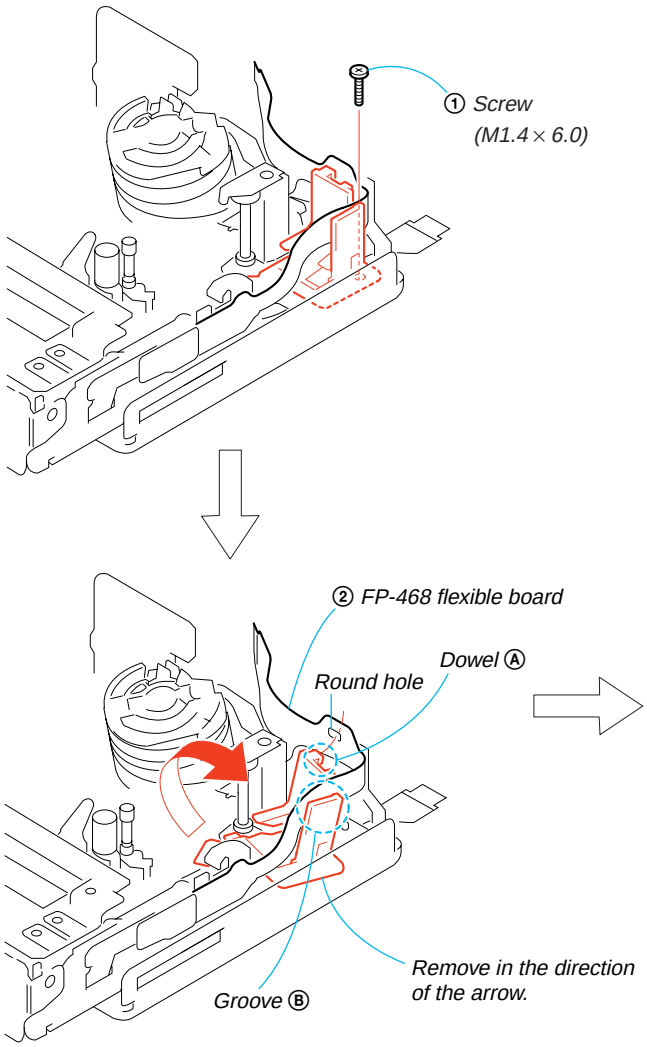
3-4. TG7 Support

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 6.0) ①.
2) Remove the FP-468 flexible board ② from the dowel Ⓐ of the TG7 support.
3) Remove the FP-468 flexible board ② from the groove Ⓑ of the TG7 support.
4) Remove the TG7 support ③ in the direction of the arrow.

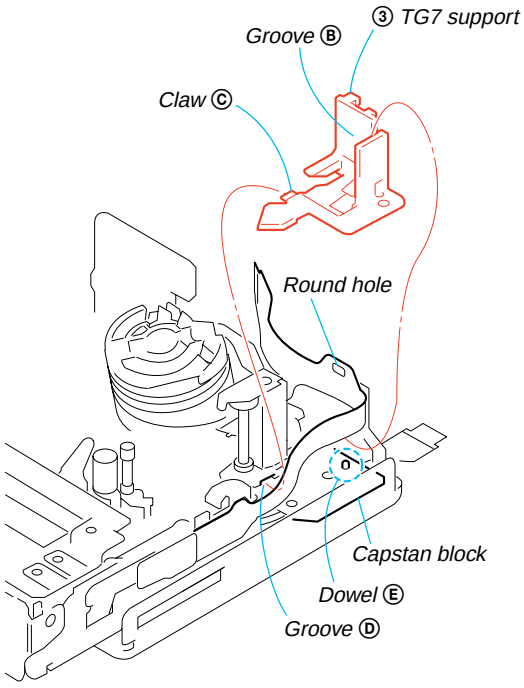
2. Attachment procedure

1) Install the FP-468 flexible board ② into the groove Ⓑ of TG7 support ③.
2) Insert the claw Ⓒ of the TG7 support ③ into the groove Ⓓ of the capstan block, and fix it while aligning with the dowel Ⓔ.
3) Align the round hole of the FP-468 flexible board ② with the dowel Ⓐ of the TG7 support ③.
4) Install the screw (special head screw M1.4 × 6.0) ①.
Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



Points to be noted

• Be careful not to damage the FP-468 flexible board.



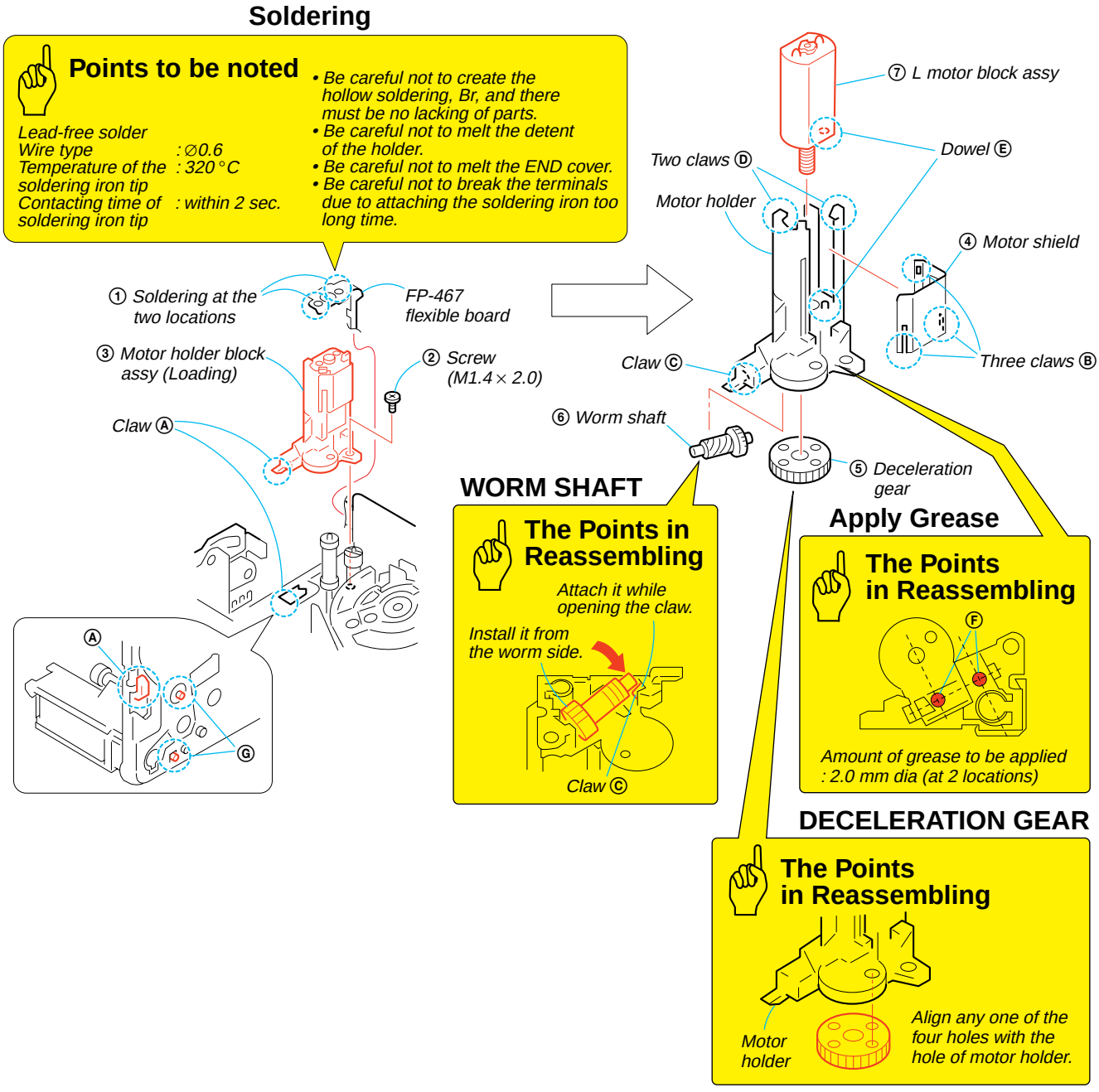
3-5. Motor Holder Block Assy and L Motor Block Assy

1. Removal procedure

1) Remove soldering at the two locations ①, and remove the FP-467 flexible board from the motor holder block assy (loading) ③.
2) Remove the screw (special head screw M1.4 × 2.0) ②.
3) Remove the motor holder block assy (loading) ③ by pulling it off from the claw Ⓐ.
4) Release the three claws Ⓑ and remove the motor shield ④.
5) Remove the deceleration gear ⑤.
6) Release the claw Ⓒ and remove the worm shaft ⑥.
7) Release the two claws Ⓓ and remove the L motor block assy ⑦ from the motor holder.

2. Attachment procedure

1) Confirm the direction of the L motor block assy ⑦. Align the dowels Ⓔ then install into the motor holder. (Insert the motor worm so that the motor worm does not touch the motor holder, and fix it with two claws Ⓓ.
2) Engage the three claws Ⓑ and install the motor shield.
3) Apply 2.0 g of grease (at 2 locations) to the bottom Ⓕ of the motor holder.
4) Install the worm shaft ⑥ from the worm side and set the claw.
5) Install the reduction gear ⑤.
6) Engage the claw Ⓐ and align the two dowels Ⓖ. Then install the motor holder block assy (loading) ③ in the mechanical chassis block. Install the screw (special head screw M1.4 × 2.0) ②.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
7) Make soldering at the two locations ①. Install the motor holder block assy (loading) ③ into the FP-467 flexible board ④.


Soldering
Points to be noted
Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of soldering iron tip : within 2 sec.
• Be careful not to create the hollow soldering, Br, and there must be no lacking of parts.
• Be careful not to melt the detent of the holder.
• Be careful not to melt the END cover.
• Be careful not to break the terminals due to attaching the soldering iron too long time.
① Soldering at the two locations
FP-467 flexible board
③ Motor holder block assy (Loading)
② Screw (M1.4 × 2.0)
Claw Ⓐ
Ⓐ
Ⓖ
⑦ L motor block assy
Two claws Ⓓ
Dowel Ⓔ
Motor holder
④ Motor shield
Three claws Ⓑ
Claw Ⓒ
⑥ Worm shaft
⑤ Deceleration gear
WORM SHAFT
The Points in Reassembling
Attach it while opening the claw.
Install it from the worm side.
Claw Ⓒ
Apply Grease
The Points in Reassembling
Ⓕ
Amount of grease to be applied : 2.0 mm dia (at 2 locations)
DECELERATION GEAR
The Points in Reassembling
Motor holder
Align any one of the four holes with the hole of motor holder.

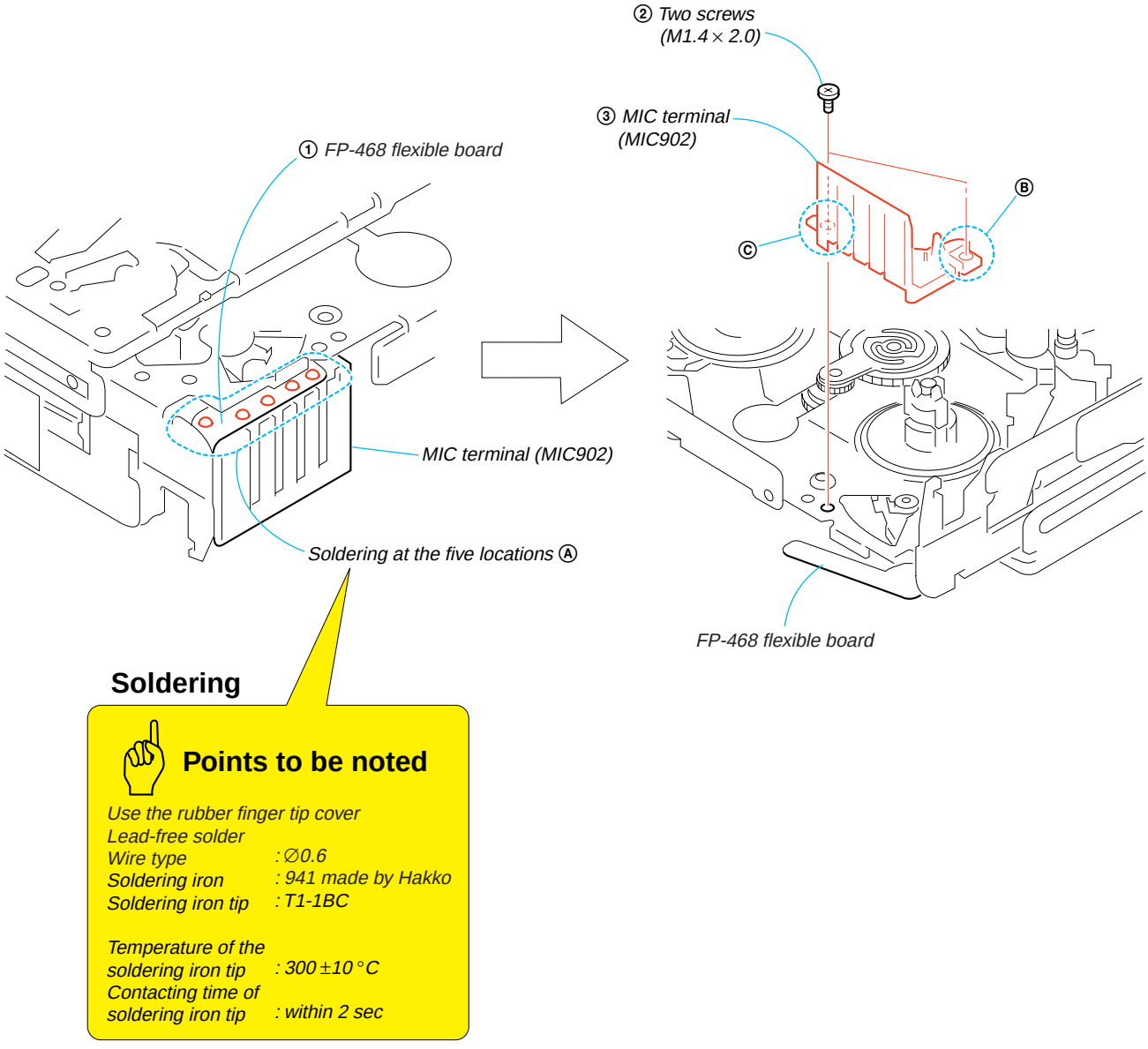
3-6. MIC Terminal (MIC902)

1. Removal procedure

1) Remove soldering at the five locations Ⓐ, and remove the FP-467 flexible board ① from the MIC terminal (MIC902) ③.
2) Remove the screw (special head screw M1.4 × 2.0) ② and remove the MIC terminal (MIC902) ③.

2. Attachment procedure

1) While pressing the top of the MIC terminal (MIC902) ③, tighten the two screws (special head screw M1.4 × 2.0) ② in the order of Ⓑ then Ⓒ.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
2) Make soldering at the five locations Ⓐ, and connect the FP-468 flexible board ① into the MIC terminal (MIC902) .



Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder

Wire type	*: ∅0.6*
Soldering iron	*: 941 made by Hakko*
Soldering iron tip	*: T1-1BC*
Temperature of the soldering iron tip	*: 300 ±10 °C*
Contacting time of soldering iron tip	*: within 2 sec*

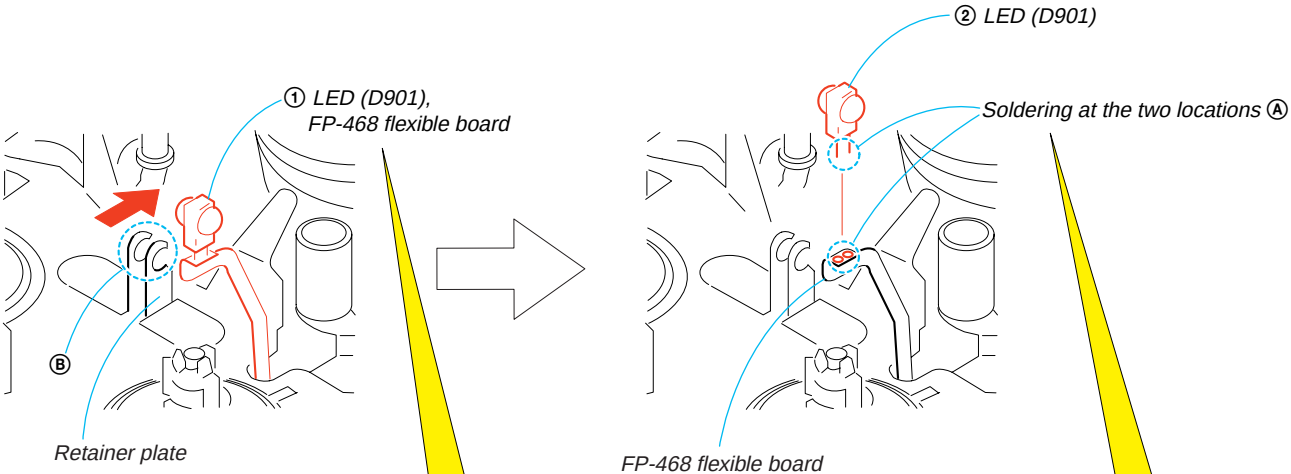
3-7. LED (D901)

1. Removal procedure

1) Remove LED (D901) and the FP-468 flexible board ① from the retainer plate.
2) Remove soldering at the two locations Ⓐ and remove LED (D901) ②.

2. Attachment procedure

1) Install the LED (D901) ② to the FP-468 flexible board by making soldering at the two locations Ⓐ.
2) Fold the FP-468 flexible board ① beneath the LED (D901) with finger tip so that it is inserted into the Ⓑ portion of the retainer plate.



LED (D901), FP-468 FLEXIBLE BOARD

Points to be noted

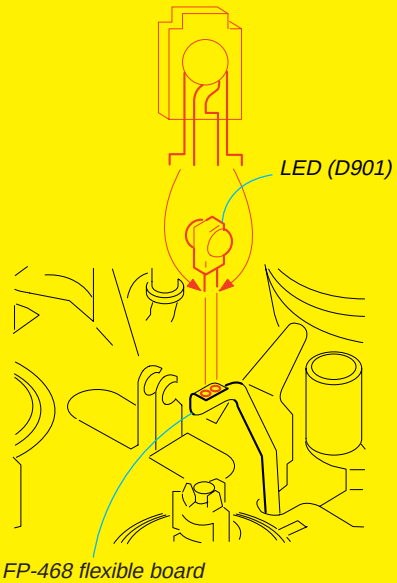
- *There must be no solder crack.*
- *There must be no scars and no stains.*
- *The flexible board must have no breakdown.*
- *The retainer plate and LED block must have no deformation.*

Soldering

Points to be noted

Rubber finger tip protection cover must be used.
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Soldering iron tip: T1-1BC
Temperature of the soldering iron tip: 300 ±10 °C
Contacting time of soldering iron tip: within 2 sec.

Direction of the terminal is specified.



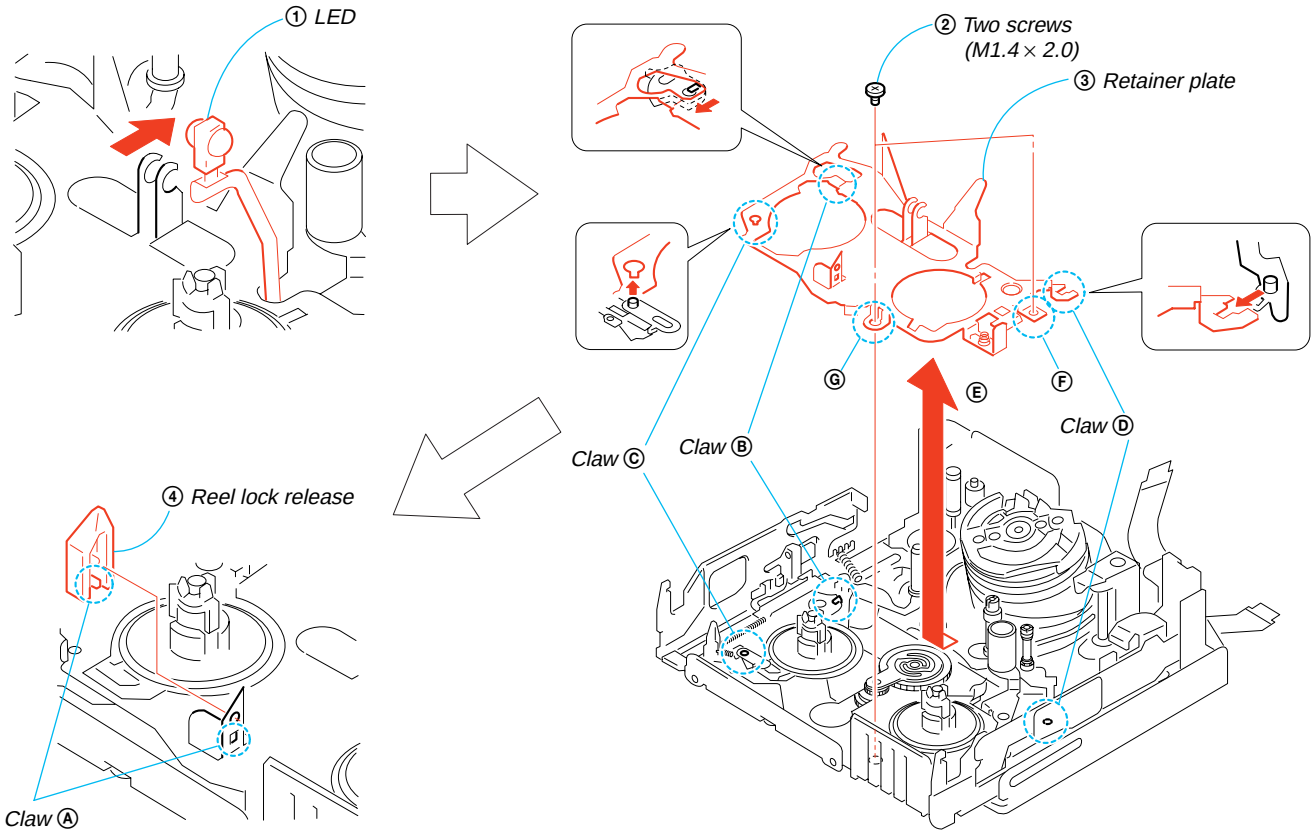
3-8. Retainer Plate

1. Removal procedure

1) Remove LED ① from the retainer plate.
2) Remove the two screws (special head screw M1.4 × 2.0) ②.
3) Release the three claws Ⓑ, Ⓒ and Ⓓ, and remove the retainer plate ③ in the direction of the arrow mark Ⓔ.
4) Release the claw Ⓐ and remove the reel lock release ④.

2. Attachment procedure

1) Install the reel lock release ④.
2) Place the retainer plate ③ on top of the LS chassis block assy and engage the three claws in the order starting from Ⓓ, Ⓒ and Ⓑ.
3) Install the two screws (special head screw M1.4 × 2.0) ② in the order starting from Ⓕ then Ⓖ.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
4) Install LED ① to the retainer plate.



REEL LOCK RELEASE

Key Points in Re-assembling

- *The reel lock release should not be re-used.*
- *The retainer plate must not have any deformation.*
- *The reel lock release should be fully installed. (Should not be left in the half-installed state.)*

RETAINER PLATE

Key Points in Re-assembling

- *All claws must be fully engaged. (Caution : No claws should be left disengaged.)*
- *The flexible board should not be pinched by anything.*
- *The retainer plate must not touch with the MIC terminal.*

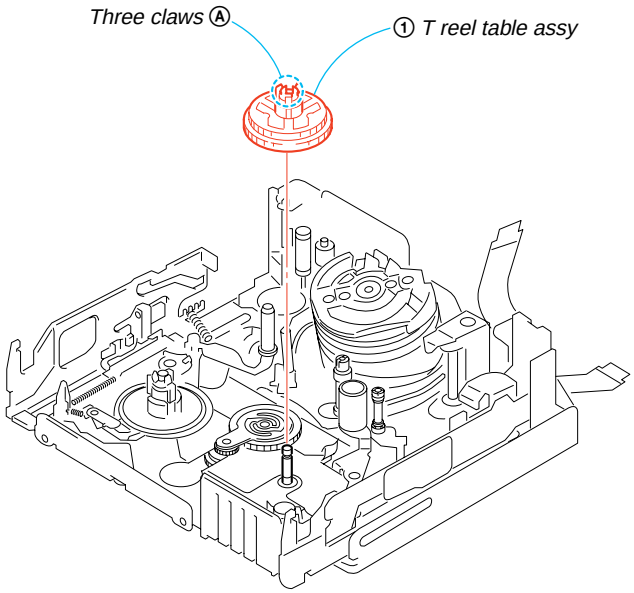
3-9. T Reel Table Assy

1. Removal procedure

1) Remove the T reel table assy ①, averting three claws Ⓐ.

2. Attachment procedure

1) Confirm that the supplied part is really the T reel table assy ①. Insert the T reel table assy ① into the T reel shaft. Install the T reel table assy ① and lock it at the position where you can hear the snapping sound. You can find the locking position by rotating the T reel table assy ①.



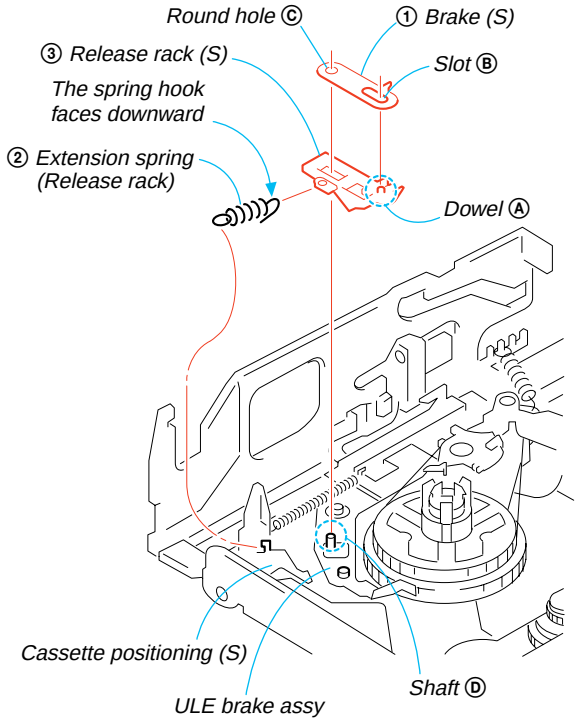
3-10. Brake (S) and Release Rack (S)

1. Removal procedure

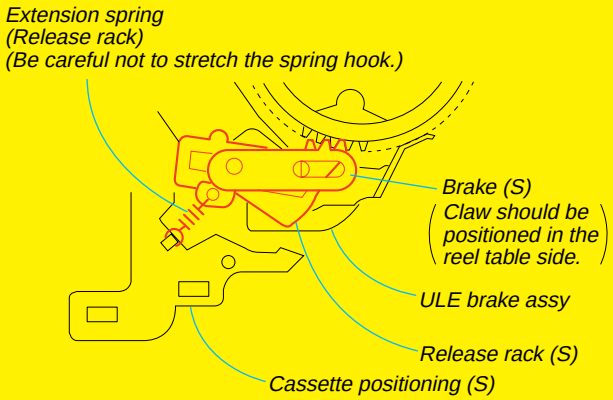
1) Remove the brake (S) ①.
2) Remove the tension spring (release rack (S)) ②.
3) Remove the release rack (S) ③.

2. Attachment procedure

1) Remove the release rack (S) ③ by holding it with a ultra precision tweezers. Install the tension spring (release rack) ② while being careful of the installation direction of the tension spring.
2) Hook the tension spring (release rack) ② on the hook of the cassette positioning (S), and then install it in the ULE brake assy.
3) Insert the slot Ⓑ in the dowel Ⓐ of the release rack (S) ③. Insert the round hole Ⓒ into the pivot shaft Ⓓ and install the brake (S) ①.
(Installation direction: Claw should be positioned in the reel table side.)



Key Points in Re-assembling


Extension spring (Release rack) (Be careful not to stretch the spring hook.)
Brake (S) Claw should be positioned in the reel table side.
ULE brake assy
Release rack (S)
Cassette positioning (S)

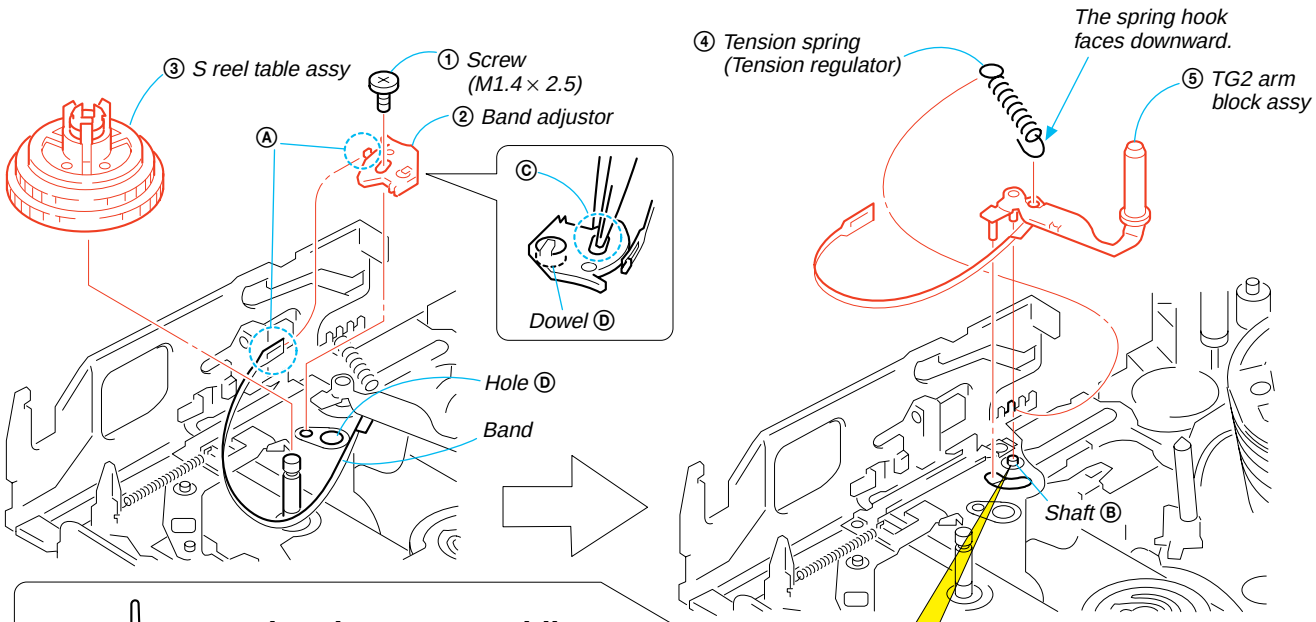
3-11. Band Adjuster, S Reel Table Assy and TG2 Arm Block Assy

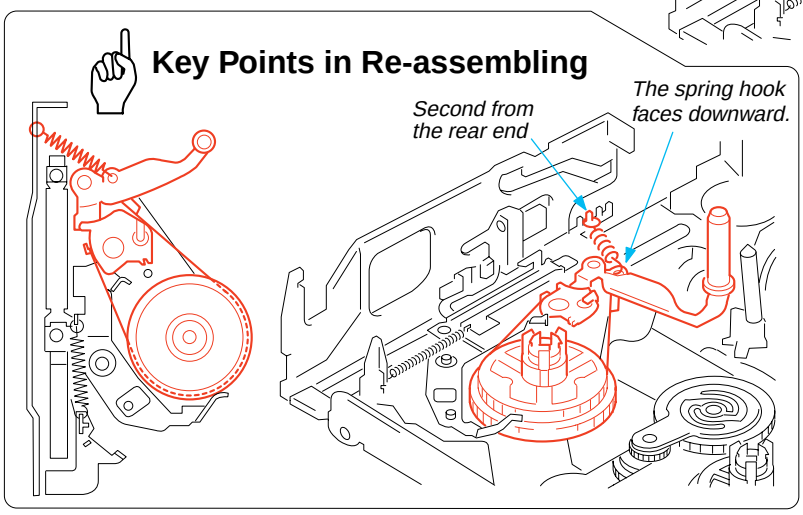
1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.5) ①.
2) Remove the band Ⓐ of the TG2 arm block and remove the band adjuster ②.
3) Remove the S reel table assy ③.
4) Remove the tension spring (tension regulator spring) ④.
5) Remove the TG2 arm block assy ⑤.

2. Attachment procedure

1) Install the S reel table assy ③.
2) Apply grease in the TG2 arm pivot shaft Ⓑ.
   Amount of grease: a ball of 1.0 mm diameter of grease
   Re-application of grease to the point which is greased already before is not necessary.
3) Hold the TG2 arm block assy ⑤ with tweezers and insert it in the TG2 arm pivot shaft Ⓑ.
4) Hook the tension spring (tension regulator spring) ④ on the TG2 arm block ⑤ with tweezers so that the hook faces downward.
5) Hook the tension spring (tension regulator spring) ④ on the LS chassis block assy (the second hook from the rear end).
6) Hook the Ⓐ portion of the band on the claw of the band adjuster ②.
7) Hold the band adjuster with tweezers as shown in Ⓒ. Insert the band into groove of the S reel table assy while rotating it, and insert the adjuster's dowel into the dowel hole Ⓓ of the LS chassis block assy.
8) Install the band adjuster ② with the screw (special head screw M1.4 × 2.5) ①.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)
9) Perform the TG2 FWD Position Adjustment referring to section 4-1.
10) Perform the FWD Back-tension Adjustment referring to section 4-4.
11) Perform the Reel Torque Check referring to section 4-2.

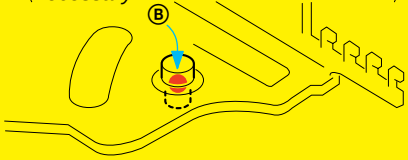




Apply Grease

Points to be noted

During installation, apply grease in the TG2 arm pivot shaft hole.
Amount of grease:
a ball of grease of 1.0 mm diameter
Re-application of grease to the point which is greased already before is not necessary.



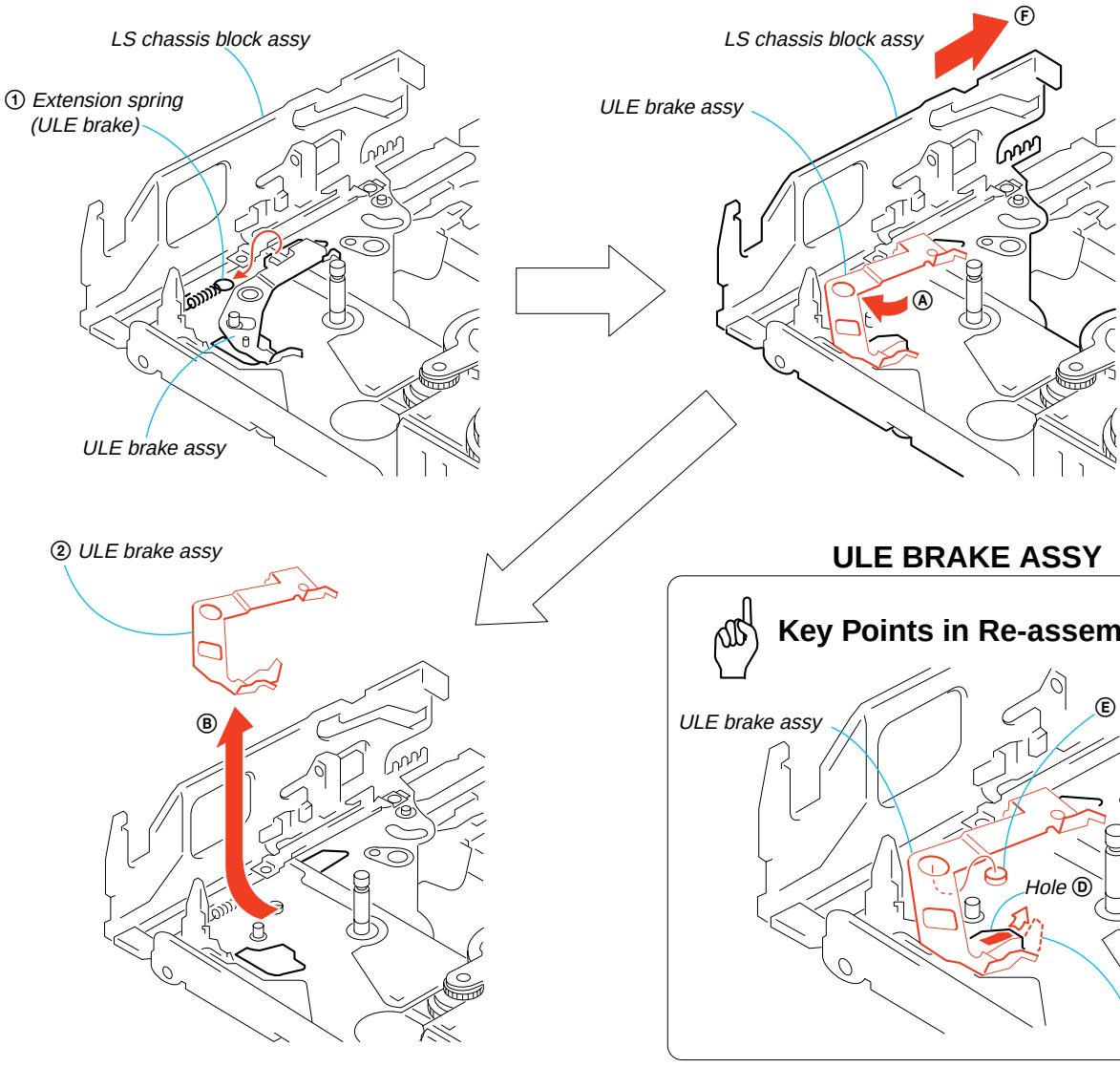
3-12. ULE Brake Assy

1. Removal procedure

1) Remove the tension spring (ULE brake) ① from the ULE brake assy ②.
2) Slide the LS chassis block assy slightly in the direction of the arrow Ⓕ.
3) Slant the ULE brake assy ② in the direction of the arrow Ⓐ and remove it by sliding it in the direction of Ⓑ.

2. Attachment procedure

1) Confirm the front side and the rear side of the ULE brake assy ②. Hold it correctly with tweezers. Insert the portion Ⓒ into the hole Ⓓ of the LS chassis block assy and install the center hole in the Ⓔ of the chassis.
2) Install the tension spring (ULE brake assy) ①.



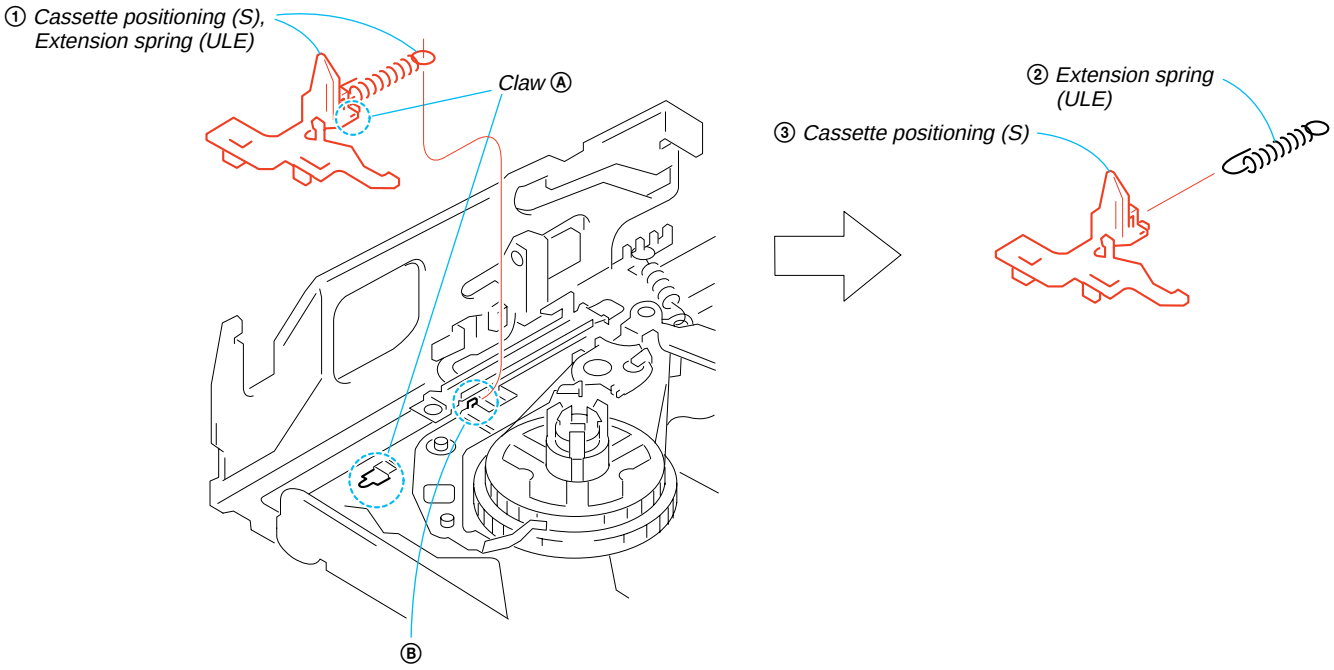
3-13. Cassette Positioning (S)

1. Removal procedure

1) Remove the tention spring (ULE brake) ② from the hook Ⓑ of ULE brake assy.
2) Slide the cassette positioning (S), then remove the cassette positioning (S) and tension spring (ULE brake) ① all together at the same time.
3) Remove the tension spring (ULE brake) ② from the cassette positioning (S) ③.

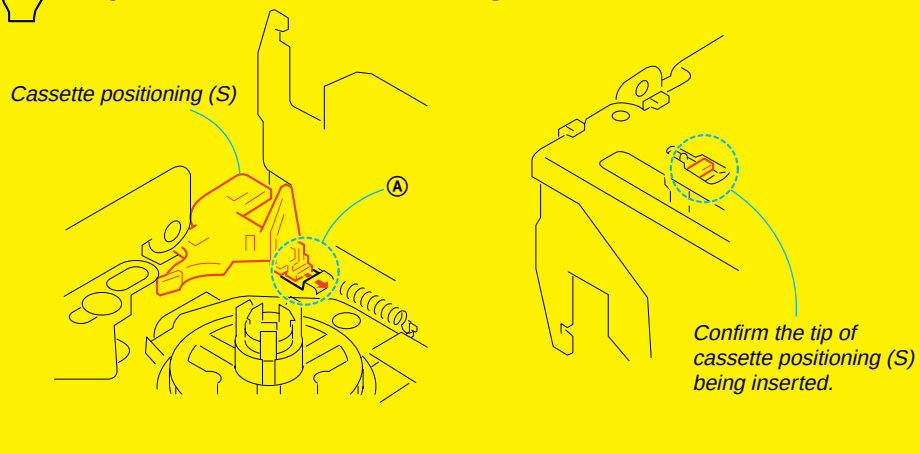
2. Attachment procedure

1) Hook the tension spring (ULE brake) ② on the cassette positioning (S) ③ with tweezers.
2) Hold the cassette positioning (S) ③ with tweezers and insert the top tip of the claw into the LS chassis block assy Ⓐ. Lock it by sliding it in.
3) Install the other end of the tension spring (ULE brake) ② on the hook Ⓑ.



CASSETTE POSITIONING (S)

Key Points in Re-assembling



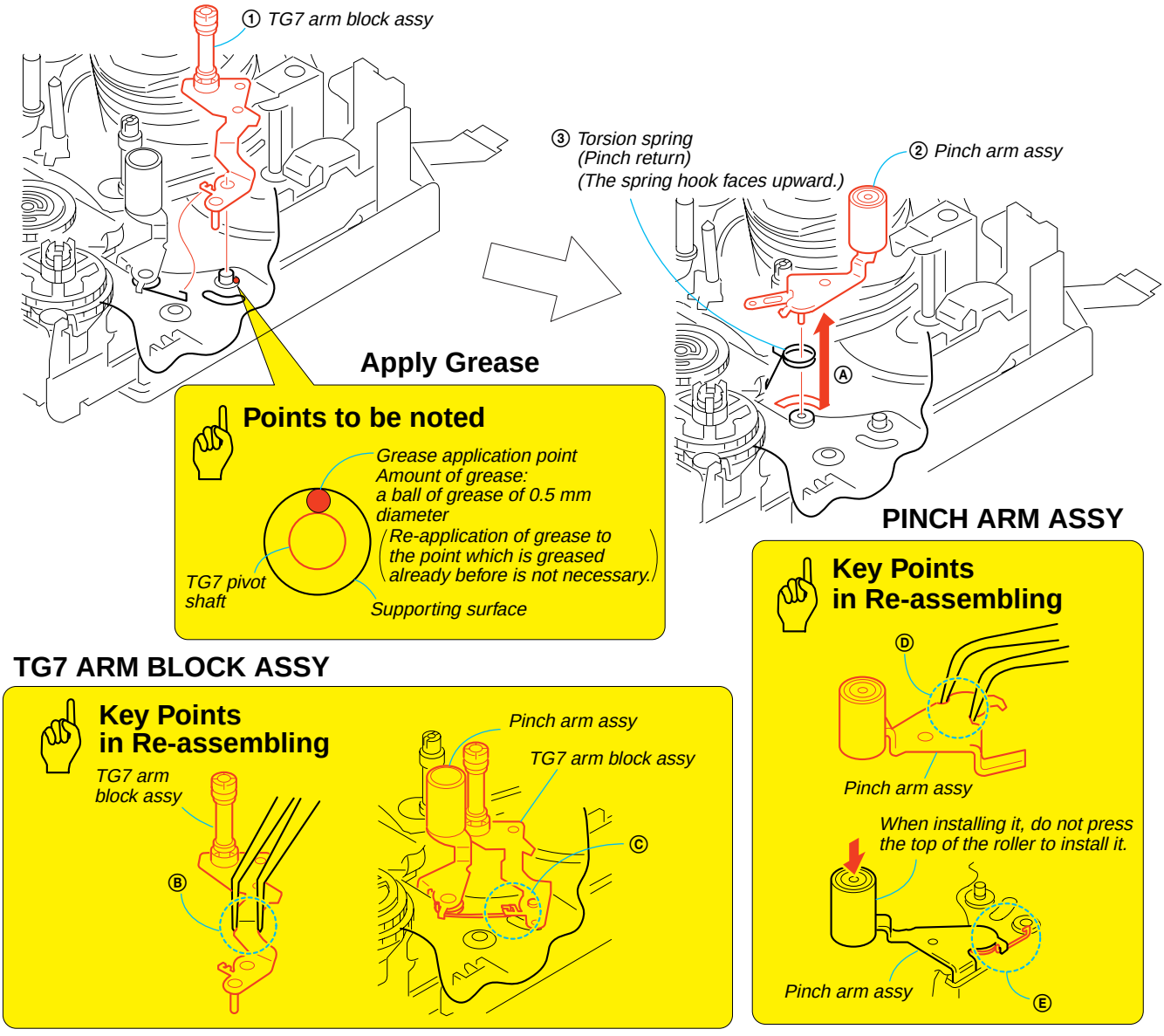
3-14. TG7 Arm Block Assy and Pinch Arm Assy

1. Removal procedure

1) Remove the TG7 arm block assy ①.
2) Rotate the pinch arm assy ② in the direction of the arrow Ⓐ and remove it.
3) Remove the torsion spring (pinch return) ③.

2. Attachment procedure

1) Hold the torsion spring (pinch return) ③ with tweezers. Confirm that the hook faces upward and install it in the bearing.
2) Hold the pinch arm assy ② as shown in Ⓓ and install it in the pinch arm bearing.
3) Hold the torsion coil spring (pinch return) ③ with tweezers and install it as shown in Ⓔ.
4) Apply grease on the supporting surface of the TG7 pivot shaft.
   Amount of grease: a ball of grease of 0.5 mm diamte
   Re-application of grease to the point which is greased already before is not necessary.
5) Hold the TG7 arm block assy ① as shown in Ⓑ and insert it in the pivot shaft of the TG7 arm.
6) Hold the torsion spring (pinch return) ③ with tweezers and install it on the hook of the TG7 arm block assy ① as shown in Ⓒ.
7) Confirm that the torsion spring (pinch return) ③ does not override on the pinch supporting shaft.



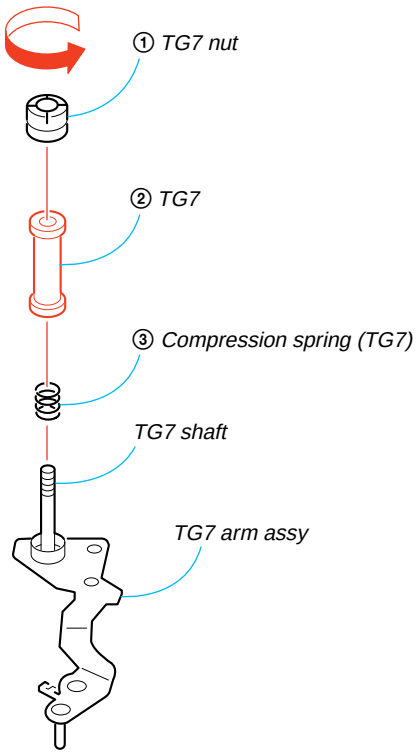
3-15. TG7

1. Removal procedure

1) Remove the TG7 nut ① by turning it in the direction of the arrow.
2) Remove the TG7 ② and compression coil spring ③ from the TG7 arm block assy.

2. Attachment procedure

1) Install the compression coil spring ③ and TG7 ② in the TG7 shaft of the TG7 arm block assy.
2) Install the TG7 nut ① by turning it in the opposite direction of the arrow.



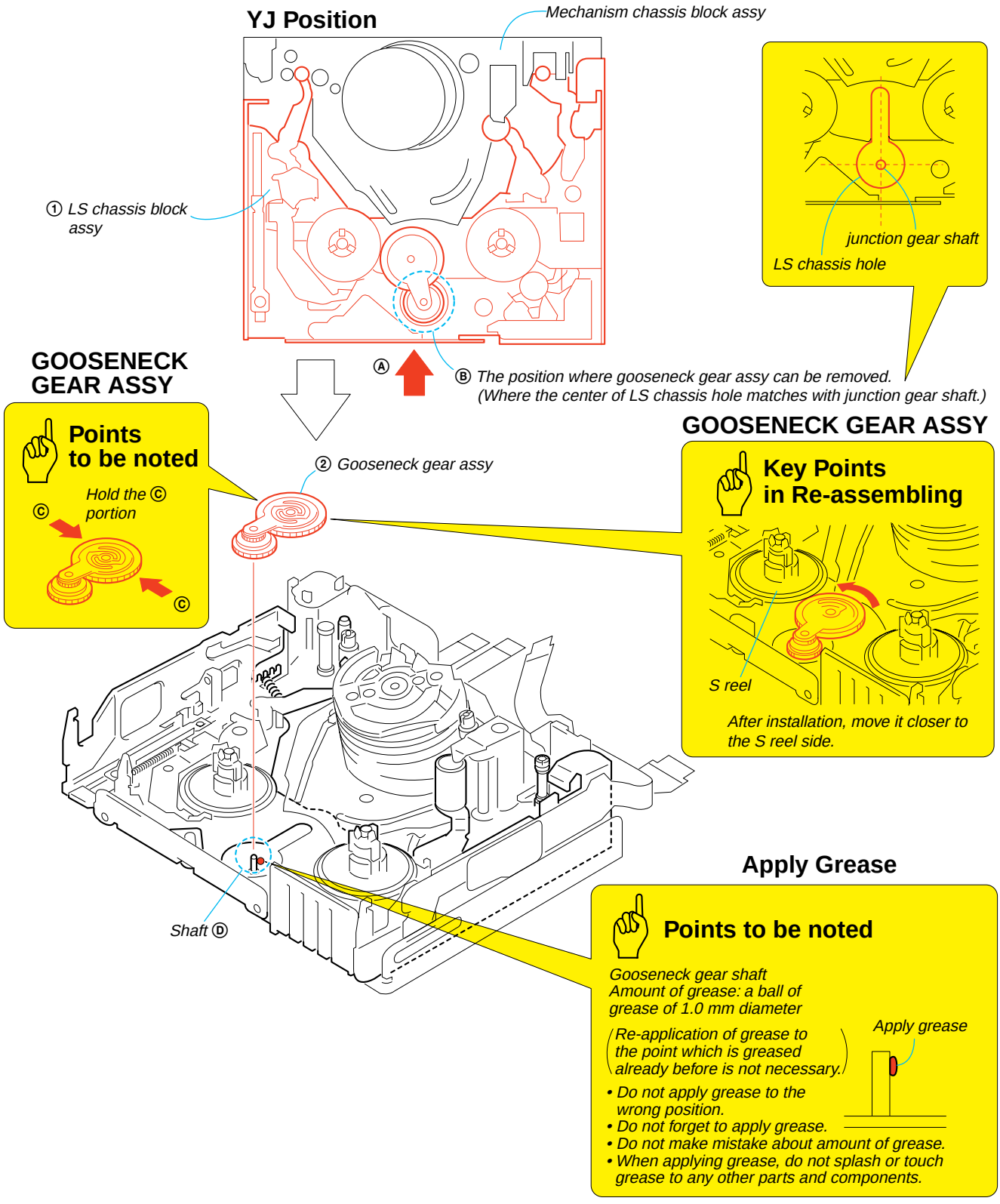
3-16. Gooseneck Gear Assy

1. Removal procedure

1) Move the LS chassis block assy ① in the direction of the arrow Ⓐ to make it in YJ position.
   YJ position: The position Ⓑ where gooseneck gear assy can be removed. (where the center of LS chassis hole matches with junction gear shaft.)
2) Remove the gooseneck gear assy, holding it with Ⓒ.

2. Attachment procedure

1) Apply grease to the gooseneck gear shaft Ⓓ portion.
   Amount of grease: a ball of grease of 1.0 mm diameter
   Need no re-application to one which applied already.
2) Install the gooseneck gear assy, holding it with Ⓒ in the gooseneck gear shaft.
3) Move it closer to the S reel.


YJ Position
Mechanism chassis block assy
① LS chassis block assy
junction gear shaft
LS chassis hole
Ⓐ
Ⓑ The position where gooseneck gear assy can be removed.
(Where the center of LS chassis hole matches with junction gear shaft.)
GOOSENECK GEAR ASSY
Points to be noted
Hold the Ⓒ portion
Ⓒ
Ⓒ
② Gooseneck gear assy
GOOSENECK GEAR ASSY
Key Points in Re-assembling
S reel
After installation, move it closer to the S reel side.
Shaft Ⓓ
Apply Grease
Points to be noted
Gooseneck gear shaft
Amount of grease: a ball of grease of 1.0 mm diameter
Re-application of grease to the point which is greased already before is not necessary.
Apply grease
• Do not apply grease to the wrong position.
• Do not forget to apply grease.
• Do not make mistake about amount of grease.
• When applying grease, do not splash or touch grease to any other parts and components.

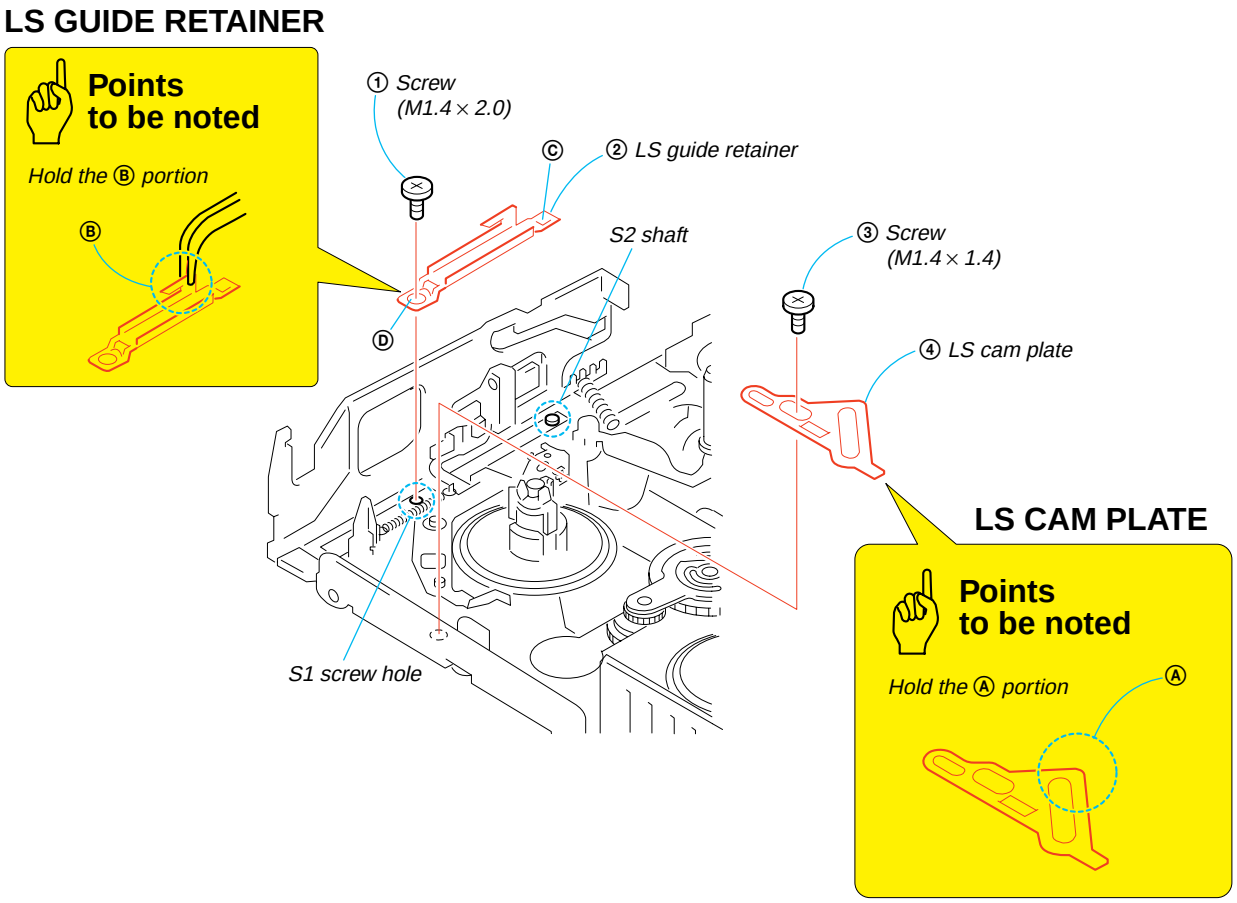
3-17. LS Guide Retainer and LS Cam Plate

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ①. and remove the LS guide retainer ②.
2) Remove the screw (special head screw M1.4 × 1.4) ③ and remove the LS cam plate ④.

2. Attachment procedure

1) Hold the LS cam plate with Ⓐ and place it aligning the two dowels. Tighten the screw (special head screw M1.4 × 1.4) ③ in half way.
2) Adjust the LS cam plate by referring to section 4-5.
3) Hold the LS guide retainer ② with Ⓑ and hook its key hole Ⓒ on the S2 shaft, and align the hole Ⓓ to S1 screw hole.
4) Install the screw (special head screw M1.4 × 2.0) ① in the S1 screw hole.
   Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



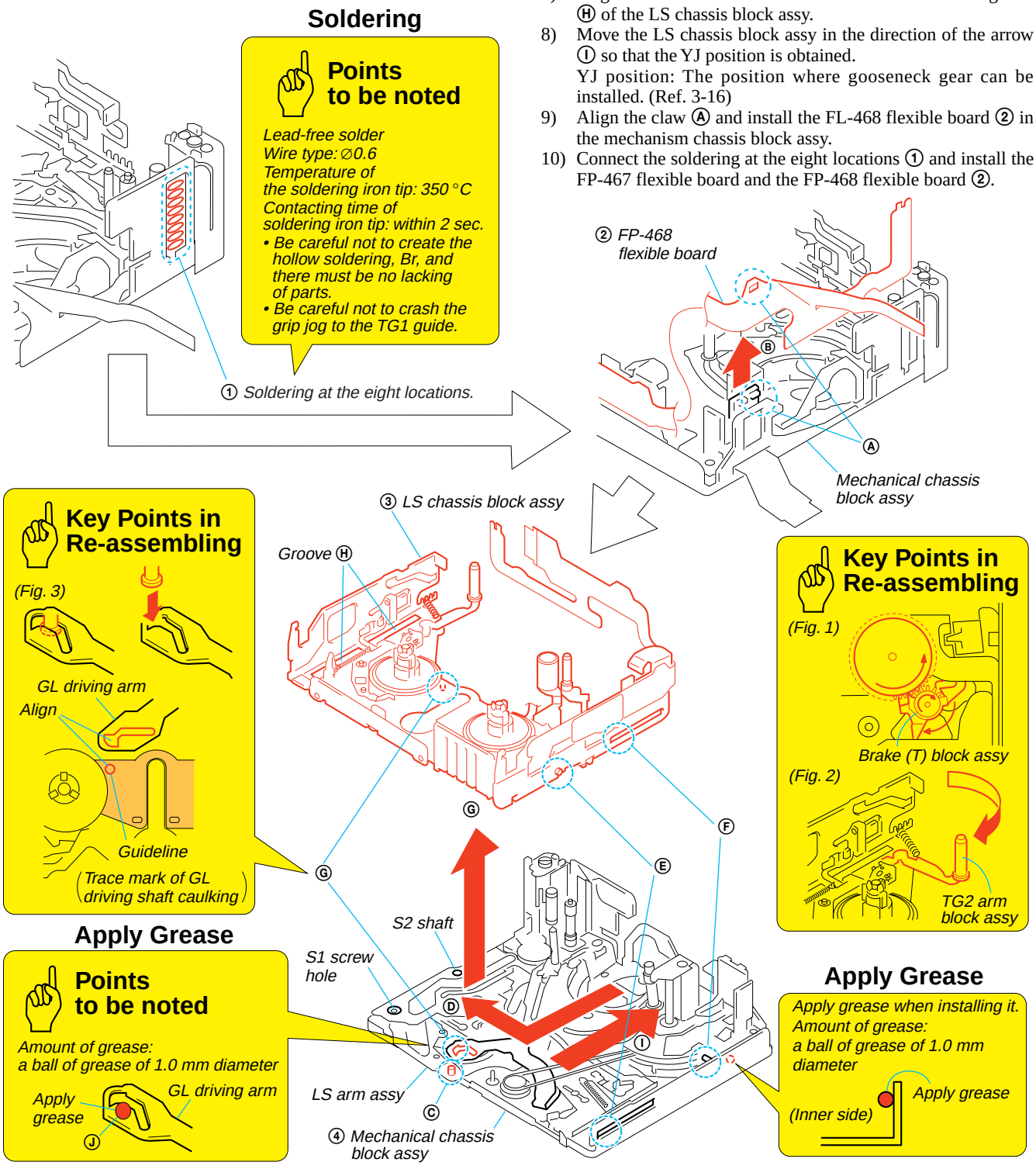
3-18. LS Chassis Block Assy and Mechanical Chassis Block Assy

1. Removal procedure

1) Remove soldering at the eight locations ①.
2) Release the claw Ⓐ and remove the FP-468 flexible board ② from the mechanical chassis block assy in the direction of the arrow Ⓑ.
3) Raise the front portion of the LS chassis block assy ③ so that the pin Ⓒ of the LS arm assy is removed. Move the LS chassis block assy ③ in the direction of the arrow Ⓓ and release the three pins of Ⓔ, Ⓕ and Ⓖ, and also groove.
4) Remove the LS chassis block ④ from the mechanical chassis block assy.

2. Attachment procedure

1) Apply grease to the GL drive arm Ⓙ portion and mechanism chassis block L.
   Amount of grease: a ball of grease of 1.0 mm diameter
2) Rotate the T reel table assy in the counter-clockwise direction and move the brake T block to the position shown in Fig. 1. (Fig. 1)
3) Move the TG2 arm block to the inner side. (Fig. 2)
4) Hold the cam groove of the GL driving arm with tweezers through LS chassis hole Ⓚ and pick it up.
5) Insert the GL drive shaft into the cam groove of the raised GL drive arm using the trace mark of caulking on the side of the S reel of the LS chassis block assy. (Fig. 3)
6) Align the pins Ⓔ, Ⓕ and Ⓖ with the grooves.
7) Align the left side S1 screw hole and S2 shaft with the goove Ⓗ of the LS chassis block assy.
8) Move the LS chassis block assy in the direction of the arrow Ⓘ so that the YJ position is obtained.
   YJ position: The position where gooseneck gear can be installed. (Ref. 3-16)
9) Align the claw Ⓐ and install the FL-468 flexible board ② in the mechanism chassis block assy.
10) Connect the soldering at the eight locations ① and install the FP-467 flexible board and the FP-468 flexible board ②.



3-19. Brake (T) Block Assy

1. Removal procedure

1) Hold the Ⓐ portion and remove the brake (T) block assy ①.

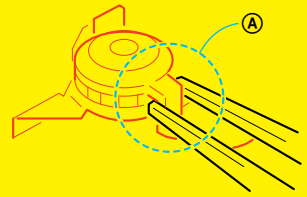
2. Attachment procedure

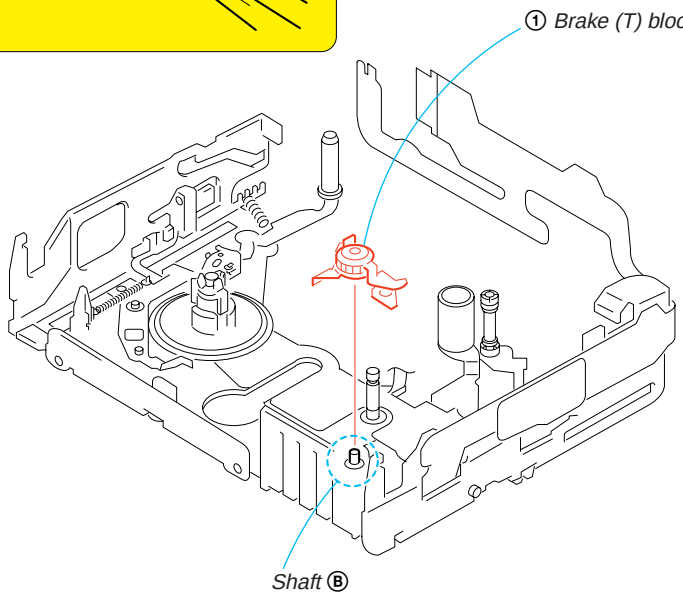
1) Hold the Ⓐ portion of the brake (T) block assy ①. While inserting the slot portion into the notch of the LS chassis block assy, install it into the shaft Ⓑ.
2) After completing installation of T reel table assy (Refer to 3-9.), rotate the brake (T) block assy ① in the clockwise direction by rotating T reel talbe assy in the counter-clockwise direction. (Fig. 1)

BRAKE (T) BLOCK ASSY

Points to be noted

Hold the Ⓐ portion

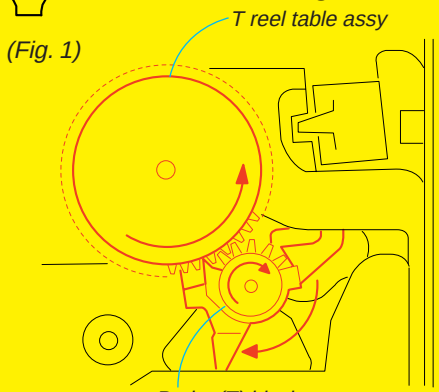




BRAKE (T) BLOCK ASSY

Key Points in Re-assembling

(Fig. 1)



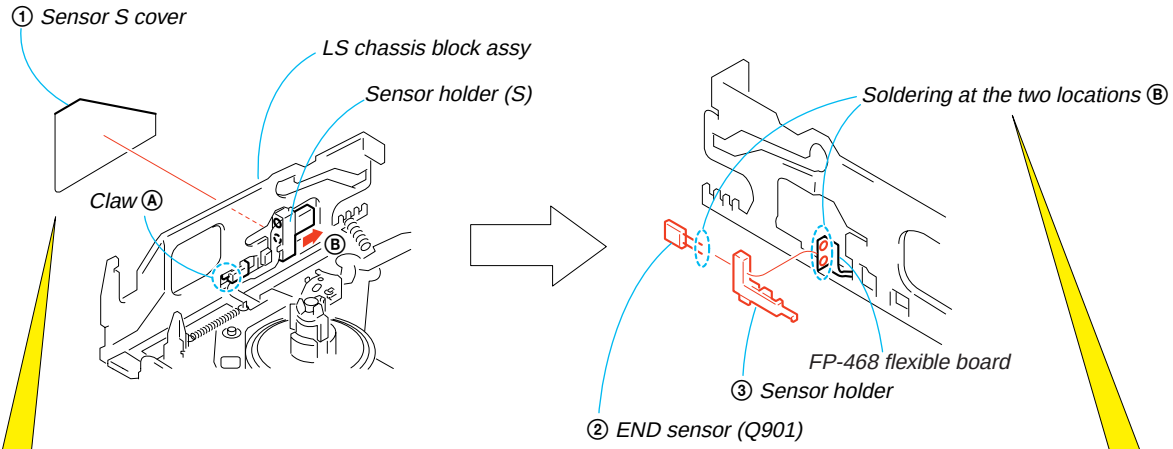
3-20. END Sensor (Q901)

1. Removal procedure

1) Peel off the sensor S cover ①.
2) Release the claw Ⓐ of the sensor holder (S) ③. Remove it from the LS chassis block assy by sliding it in the direction of the arrow Ⓑ.
3) Remove soldering at the two locations and remove the END sensor (Q901) ② and the sensor holder (S) ①.

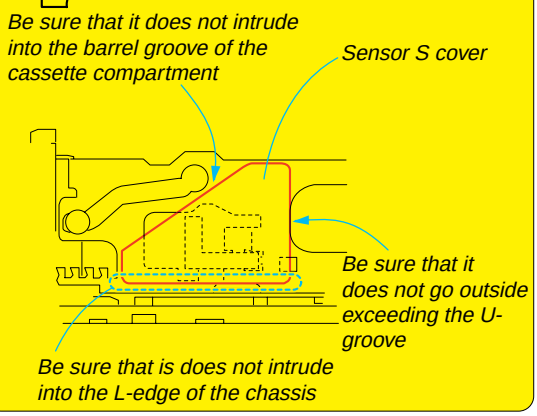
2. Attachment procedure

1) Connect the END sensor (Q901) ② and the sensor holder (S) ③ to the FP-468 flexible board by soldering them at the two locations Ⓑ.
2) Slide the END sensor (Q901) ② and the sensor holder (S) ③ in the direction of the arrow Ⓒ to install them in the LS chassis block assy.
3) Hook the flexible board on the end of the Ⓓ portion.
4) Attach the sensor S cover ①.



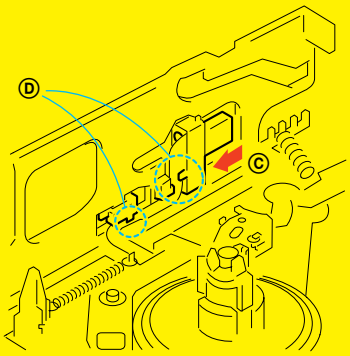
SENSOR S COVER

Key Points in Re-assembling


Be sure that it does not intrude into the barrel groove of the cassette compartment
Sensor S cover
Be sure that it does not go outside exceeding the U-groove
Be sure that is does not intrude into the L-edge of the chassis

END SENSOR (Q901), SENSOR HOLDER (S)

Key Points in Re-assembling



Soldering

Points to be noted

Use the rubber finger tip
cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec

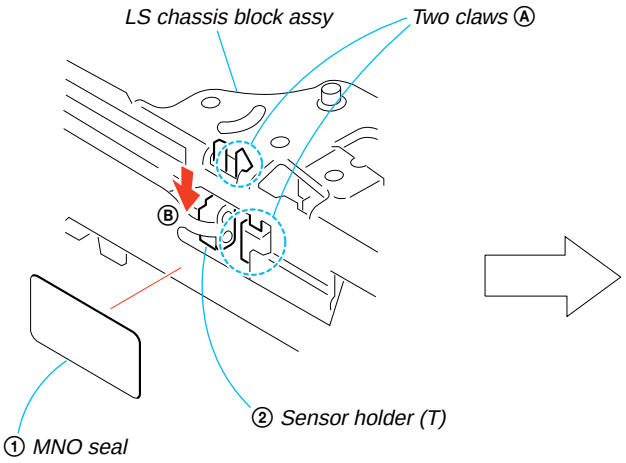
3-21. TOP Sensor (Q902)

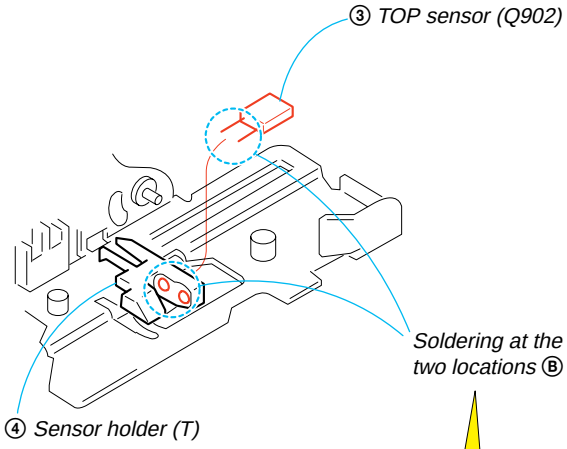
1. Removal procedure

1) Peel off the MNO seal ①.
2) Release the two claws of the sensor holder (T) ② at the two locations Ⓐ. Remove it from the LS chassis block assy by sliding it in the direction of the arrow Ⓑ.
3) Remove the soldering at the two locations Ⓑ and remove the TOP sensor (Q902) ③ and the sensor holder (T) ④.

2. Attachment procedure

1) Connect the TOP sensor (Q902) ③ and the sensor holder (T) ④ to the FP-468 flexible board by soldering them at the two locations Ⓑ.
2) Engage the two claws Ⓐ to install the TOP sensor (Q902) ③ and the sensor holder (T) ④ in the LS chassis block assy.
3) Attach the MNO seal ①.





Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec

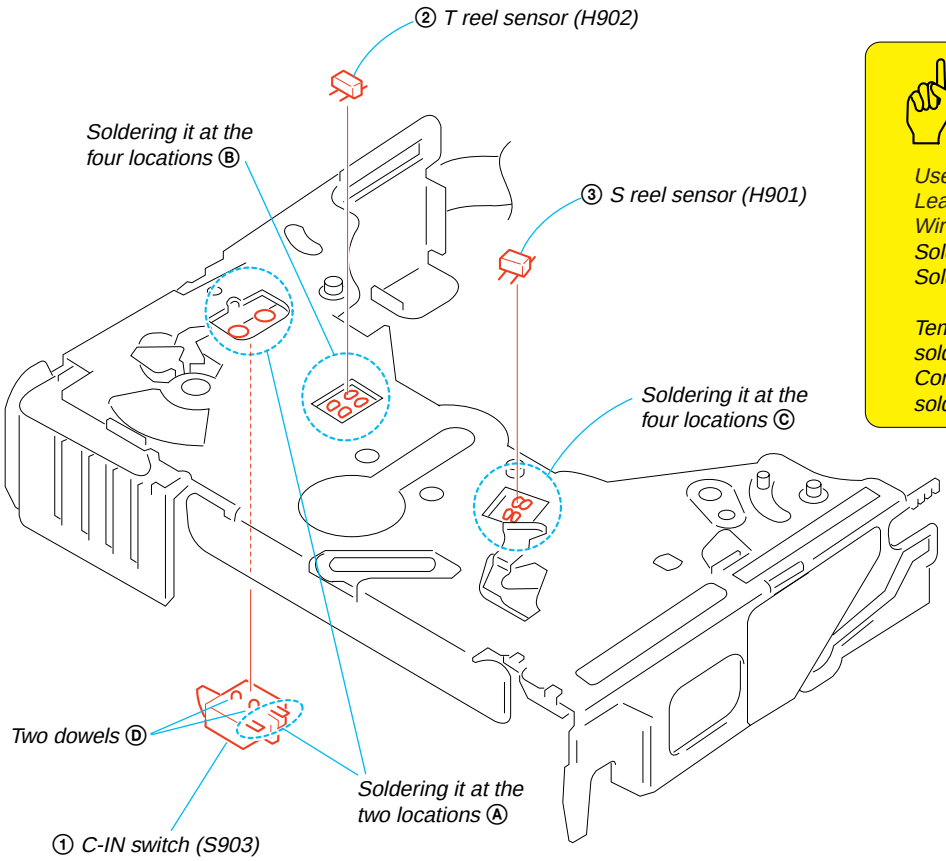
3-22. C-IN Switch (S903), S Reel Sensor (H901) and T Reel Sensor (H902)

1. Removal procedure

1) Remove soldering at the two locations Ⓐ and remove the C-IN switch (S903) ①.
2) Remove soldering at the four locations Ⓑ and remove the T reel sensor (H902) ②.
3) Remove soldering at the four locations Ⓑ and remove the S reel sensor (H901) ③.

2. Attachment procedure

1) Connect the S reel sensor (H901) ③ to the FP-468 flexible board by soldering it at the four locations Ⓒ.
2) Connect the T reel sensor (H902) ② to the FP-468 flexible board by soldering it at the four locations Ⓑ.
3) Align the two dowels Ⓓ and connect the C-IN switch (S903) ① to the FP-468 flexible board by soldering it at the two locations Ⓐ.


② T reel sensor (H902)
Soldering it at the four locations Ⓑ
③ S reel sensor (H901)
Soldering it at the four locations Ⓒ
Two dowels Ⓓ
Soldering it at the two locations Ⓐ
① C-IN switch (S903)

Soldering

Points to be noted

Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

Temperature of the soldering iron tip : 300 ± 10 °C
Contacting time of soldering iron tip : within 2 sec

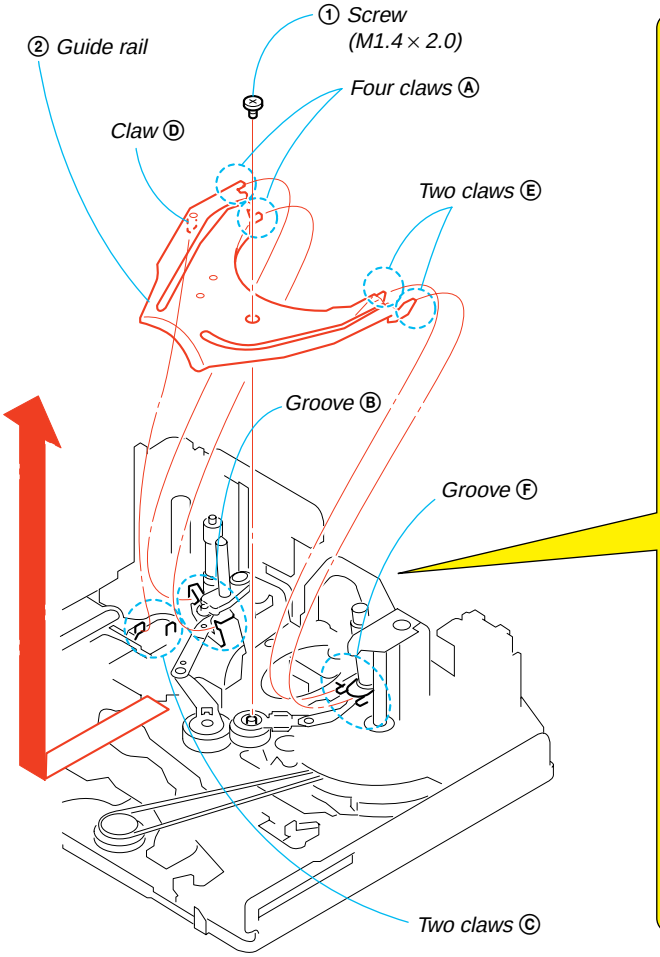
3-23. Guide Rail

1. Removal procedure

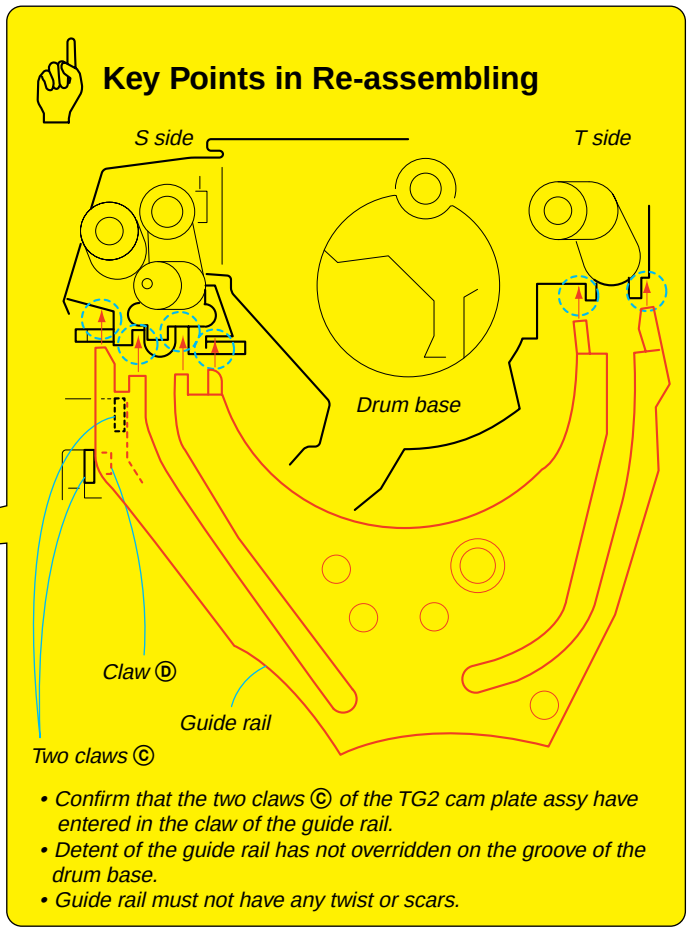
1) Remove the screw (special head screw M1.4 × 2.0) ①.
2) Remove the guide rail ② in the direction of the arrow.

2. Attachment procedure

1) Hold the center of the guide rail ②. While pressing the TG2 cam plate assy, insert the four claws Ⓐ of the guide rail in a slant angle from the top into the drum base's groove Ⓑ. (Insert the top tip of the rail at the same time.) Confirm at this time that the two claws of the TG cam plate assy have entered in the claw Ⓓ of the guide rail.
2) Insert the two claws Ⓔ of the T side guide rail into the groove Ⓕ of the drum base.
3) Tighten the screw (special head screw M1.4 × 2.0) ①.
Tightening torque: 0.059 ± 0.01N•m (0.6 ± 0.1kgf•cm)



GUIDE RAIL


Key Points in Re-assembling
S side
T side
Drum base
Claw Ⓓ
Guide rail
Two claws Ⓒ
• Confirm that the two claws Ⓒ of the TG2 cam plate assy have entered in the claw of the guide rail.
• Detent of the guide rail has not overridden on the groove of the drum base.
• Guide rail must not have any twist or scars.

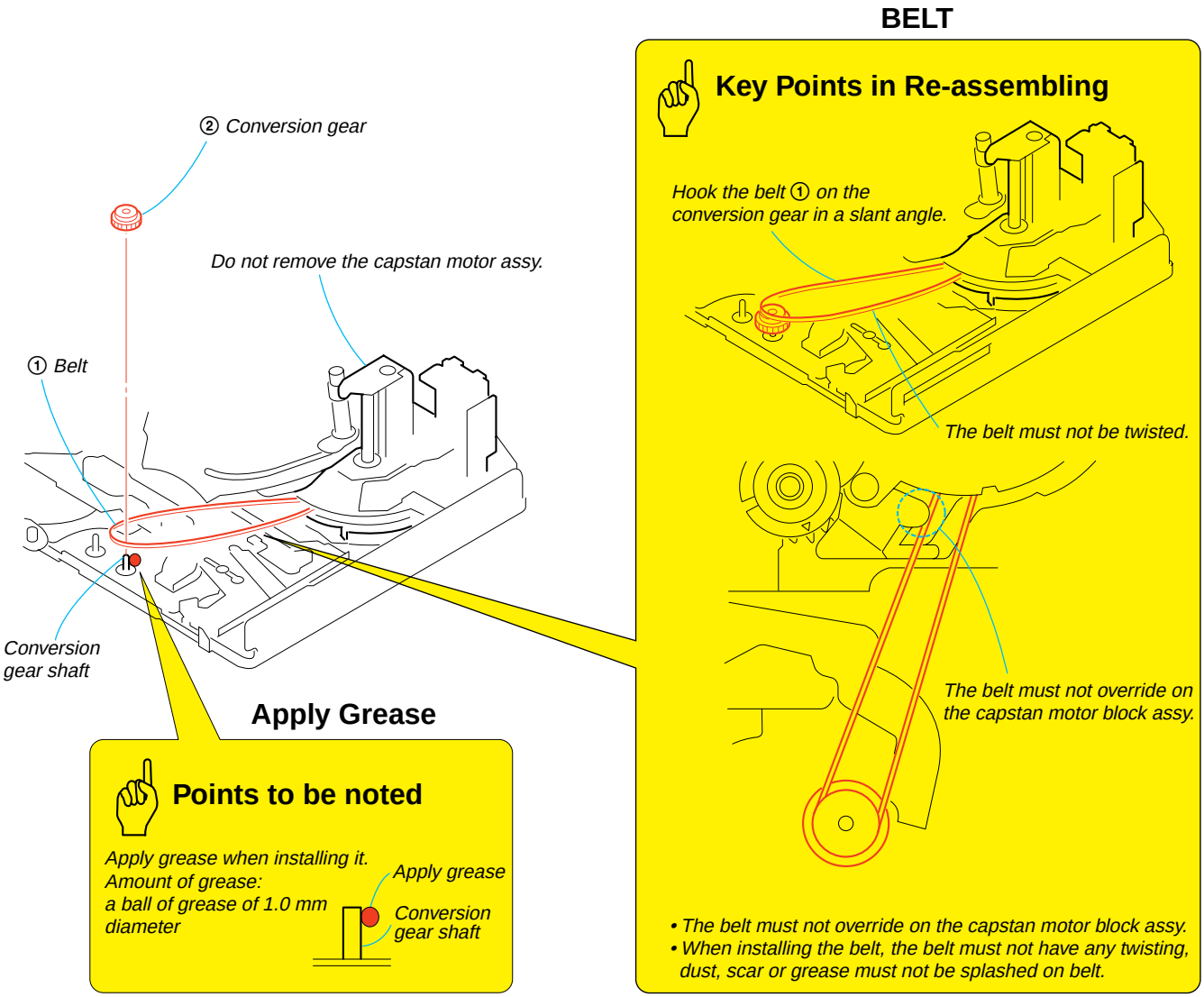
3-24. Conversion Gear

1. Removal procedure

1) Remove the belt ① from the conversion gear.
2) Remove the conversion gear ② from the conversion gear shaft.

2. Attachment procedure

1) Apply grease to the conversion gear shaft.
   Amount of grease: a ball of grease of 1.0 mm diameter
2) Install the conversion gear ② in the conversion gear shaft.
3) Hook the belt ① on the conversion gear in a slant angle and install it by rotating the conversion gear with fingertip.


② Conversion gear
Do not remove the capstan motor assy.
① Belt
Conversion gear shaft
Apply Grease
Points to be noted
Apply grease when installing it.
Amount of grease:
a ball of grease of 1.0 mm diameter
Apply grease
Conversion gear shaft
BELT
Key Points in Re-assembling
Hook the belt ① on the conversion gear in a slant angle.
The belt must not be twisted.
The belt must not override on the capstan motor block assy.
• The belt must not override on the capstan motor block assy.
• When installing the belt, the belt must not have any twisting, dust, scar or grease must not be splashed on belt.

3-25. Coaster (S) Block Assy and Coaster (T) Block Assy

1. Removal procedure

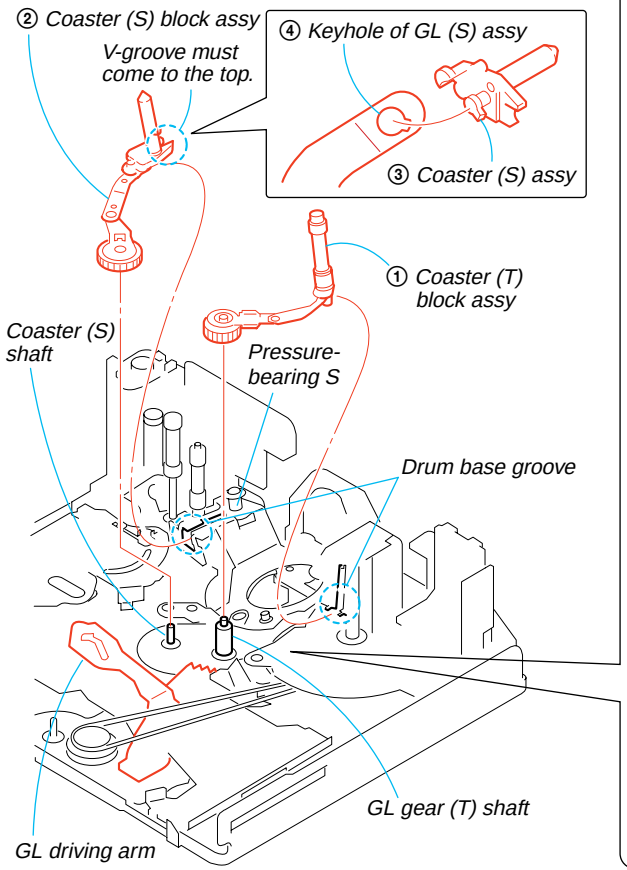
1) Remove the coaster (T) block assy ① from the coaster (T) block shaft. Remove the coaster (T) block assy from the right groove of the drum base.
2) Remove the coaster (S) block assy ② from the coaster (S) block shaft. Remove the coaster (S) block assy from the left groove of the drum base.
3) Remove coaster (S) assy ③ by rotating it through the key hole of GL (S) assy ④.

2. Attachment procedure

1) Install the coaster (S) assy ③ into the key hole of the GL (S) assy ④ by rotating it.
2) Insert the coaster (S) block assy ② into the coaster (S) block shaft. While aligning it with the left groove of the drum base, push it in the way that the V-groove comes to the top until it reaches the pressure-bearing S.
3) Push in the coaster (T) block assy ① along with the right groove of the drum base. Align the phase of the GL gear S, GL gear T and the GL drive arm at the three phasing locations. Then install the coaster (T) block assy ① in the coaster (T) block assy shaft.

Key Points in Re-assembling

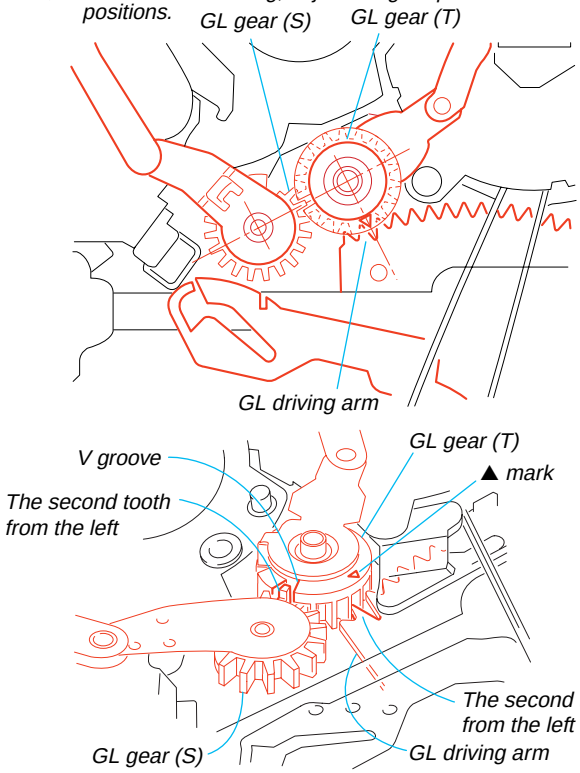
- *When aligning the coaster (S) assy with the left groove of the drum base, the V-groove must come to the top.*
- *TG4 and TG5 must not have any stain and their arms must not be deformed.*


② Coaster (S) block assy
V-groove must come to the top.
④ Keyhole of GL (S) assy
③ Coaster (S) assy
① Coaster (T) block assy
Coaster (S) shaft
Pressure-bearing S
Drum base groove
GL gear (T) shaft
GL driving arm

Phase Adjustment

Key Points in Re-assembling

When re-assembling, adjust the gear phase at the three positions.



- *The second tooth from the left of the GL gear (S) and the V-groove of the GL gear (T) must be in phase.*
- *The second tooth from the left of the GL drive arm and the ▲ mark must be in phase.*

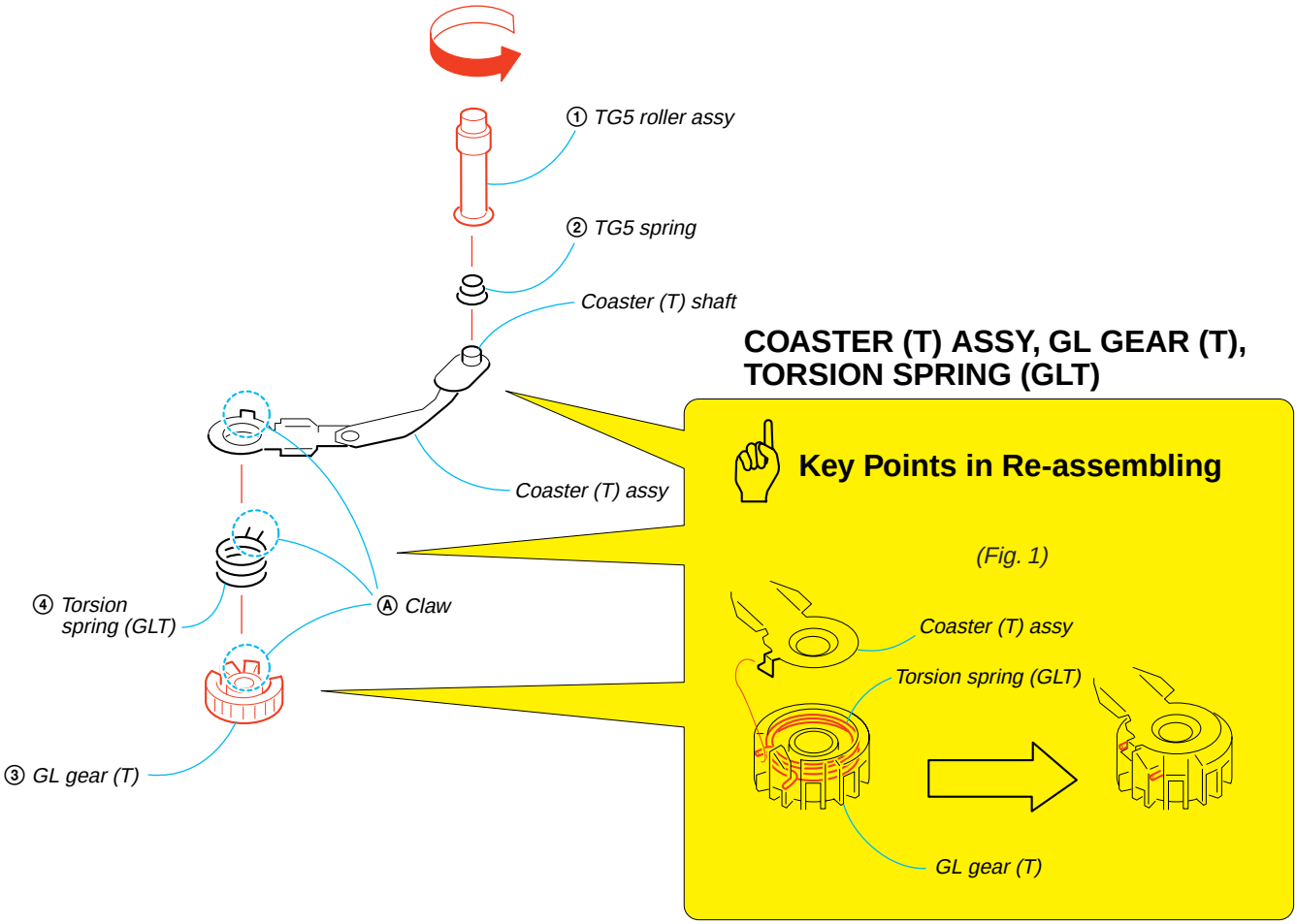
3-26. TG5 Roller Assy and GL Gear (T)

1. Removal procedure

1) Rotate the TG5 roller assy ① in the direction of the arrow and remove the TG5 roller assy ① and the TG5 spring ② from the coaster (T) assy.
2) Release the claw (A) and remove the GL gear (T) ③ and the torsion coil spring (GLT) ④ from the coaster (T) assy.

2. Attachment procedure

1) Install the GL gear (T) ③ and the torsion coil spring (GLT) ④ into the coaster (T) assy.
2) Install the TG5 spring ② into the coaster (T) assy.
3) Install the TG5 roller assy ① into the coaster (T) assy by rotating it in the direction opposite to the arrow.



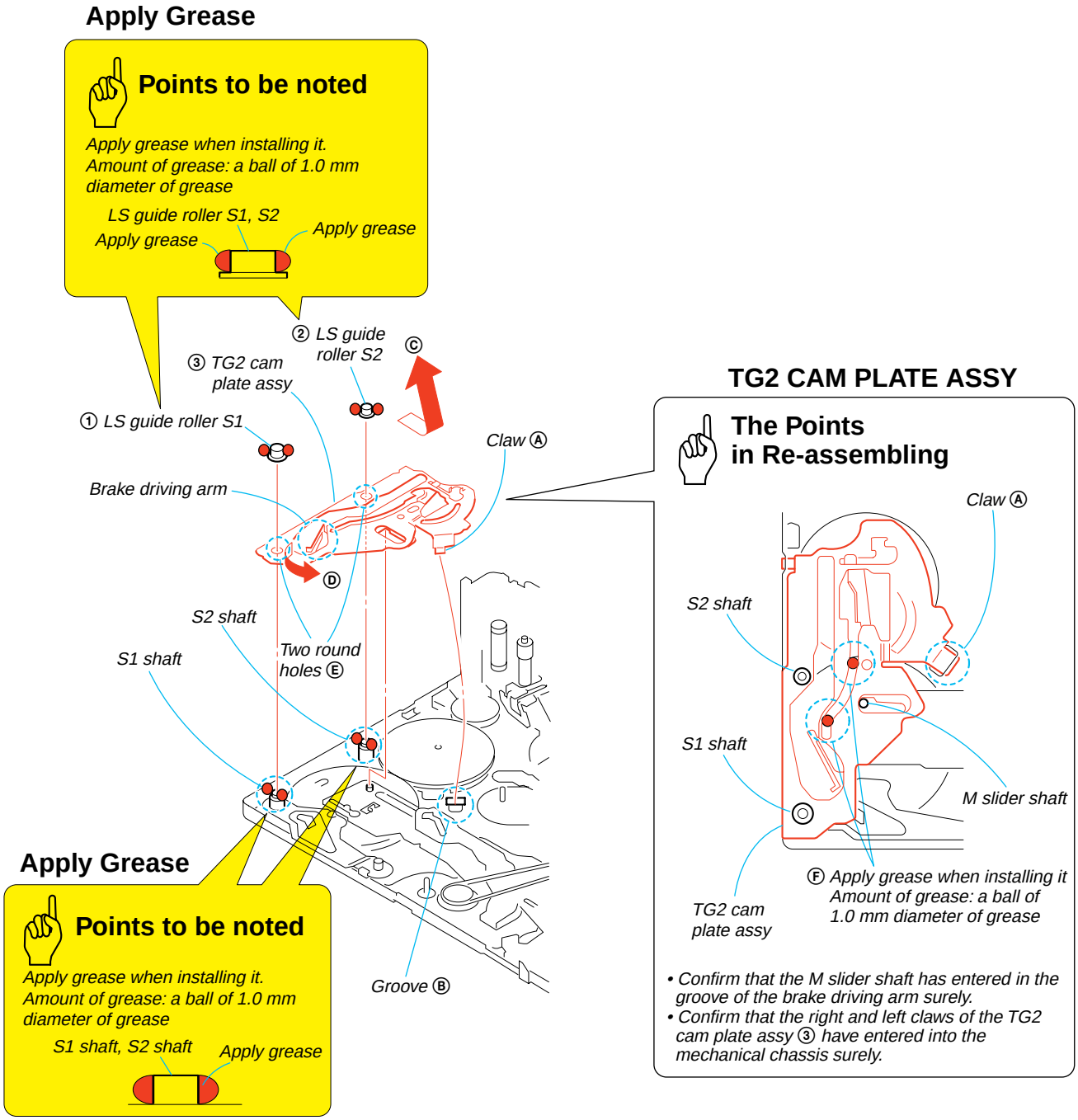
3-27. TG2 Cam Plate Assy

1. Removal procedure

1) Remove the LS guide roller (S1) ① from the S1 shaft.
2) Remove the LS guide roller (S2) ② from the S2 shaft.
3) Release the claw Ⓐ of the TG2 cam plate assy ③ from the right groove Ⓑ of the mechanical chassis.
4) Remove the TG2 cam plate assy ③ in the direction of the arrow Ⓒ.

2. Attachment procedure

1) Move the brake driving arm of the TG2 cam plate assy ③ in the direction of the arrow Ⓓ.
2) Insert the right claw Ⓐ of the TG2 cam plate assy ③ into the right groove Ⓑ of the mechanical chassis first.
3) Install the two round holes Ⓔ of the TG2 cam plate assy ③ into the S1 shaft and the S2 shaft.
4) Apply grease in the Ⓕ portion of the TG2 cam plate assy.
   Amount of grease: a ball of 1.0 mm diameter of grease
5) Apply grease to both sides of the S1 shaft and the S2 shaft.
   Amount of grease: a ball of 1.0 mm diameter of grease
6) Apply grease to both sides of the LS guide roller S1, S2.
7) Install the LS guide roller S1 ① in the S1 shaft.
8) Install the LS guide roller S2 ② in the S2 shaft.


Apply Grease
Points to be noted
Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease
LS guide roller S1, S2
Apply grease
Apply grease
② LS guide roller S2
Ⓒ
③ TG2 cam plate assy
① LS guide roller S1
Claw Ⓐ
Brake driving arm
Ⓓ
S2 shaft
S1 shaft
Two round holes Ⓔ
Groove Ⓑ
Apply Grease
Points to be noted
Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease
S1 shaft, S2 shaft
Apply grease
TG2 CAM PLATE ASSY
The Points in Re-assembling
Claw Ⓐ
S2 shaft
S1 shaft
M slider shaft
Ⓕ Apply grease when installing it
Amount of grease: a ball of 1.0 mm diameter of grease
TG2 cam plate assy
• Confirm that the M slider shaft has entered in the groove of the brake driving arm surely.
• Confirm that the right and left claws of the TG2 cam plate assy ③ have entered into the mechanical chassis surely.

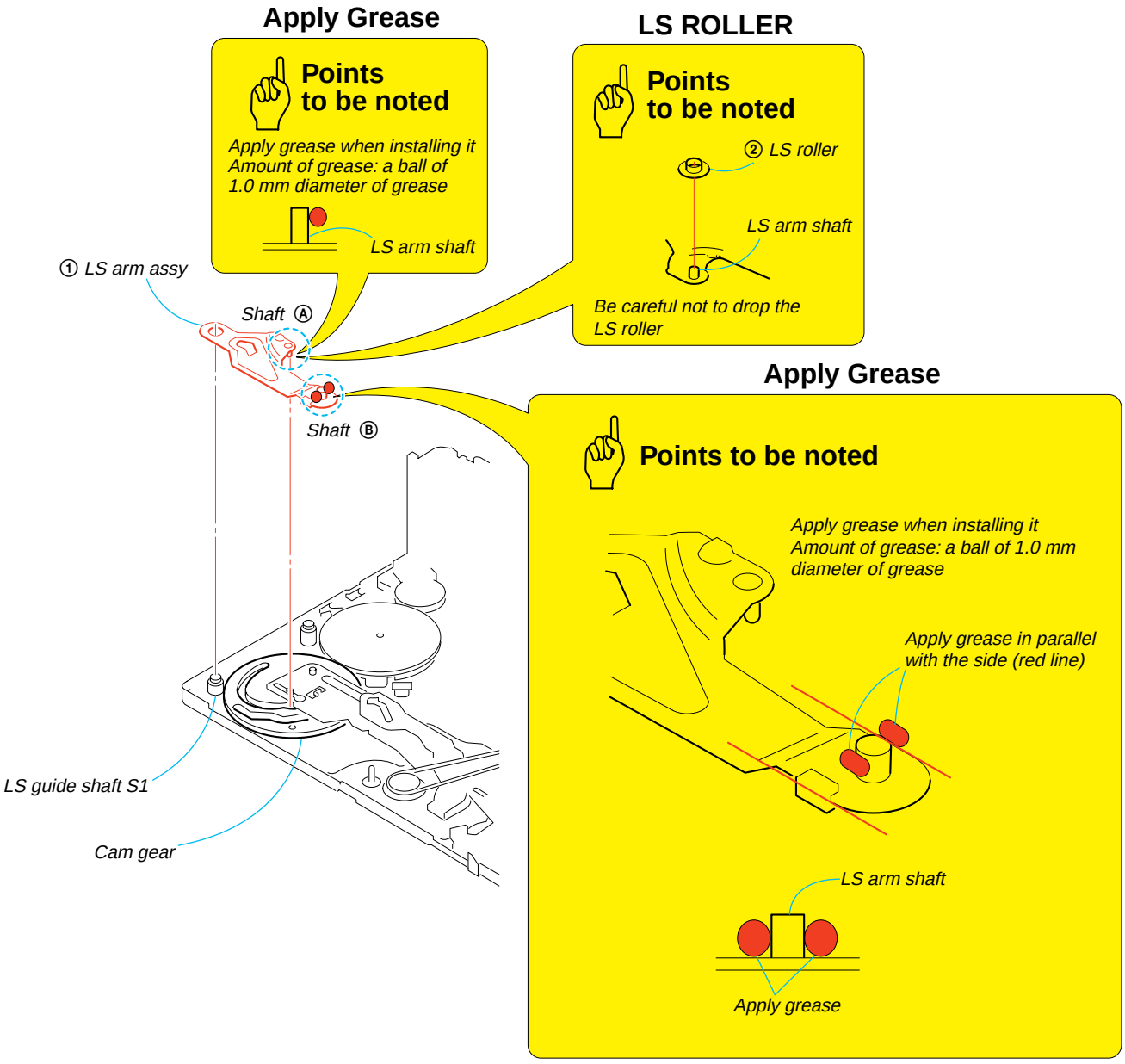
3-28. LS Arm Assy

1. Removal procedure

1) Remove the LS arm assy ① from the LS guide S1 shaft.
2) Turn over the LS arm assy and remove the LS roller ②.

2. Attachment procedure

1) Apply grease to the LS arm shaft Ⓐ (on the side).
2) Install the LS roller ② into the LS arm shaft.
3) Turn over the LS arm assy ① and install it while matching the phase of the LS guide shaft S1 and the cam gear groove.
4) Apply grease to the LS arm shaft Ⓑ (on its side).


Apply Grease
Points to be noted
Apply grease when installing it
Amount of grease: a ball of 1.0 mm diameter of grease
LS arm shaft
LS ROLLER
Points to be noted
② LS roller
LS arm shaft
Be careful not to drop the LS roller
① LS arm assy
Shaft Ⓐ
Shaft Ⓑ
Apply Grease
Points to be noted
Apply grease when installing it
Amount of grease: a ball of 1.0 mm diameter of grease
Apply grease in parallel with the side (red line)
LS arm shaft
Apply grease
LS guide shaft S1
Cam gear

3-29. M Slider Assy (1)

1. Removal procedure

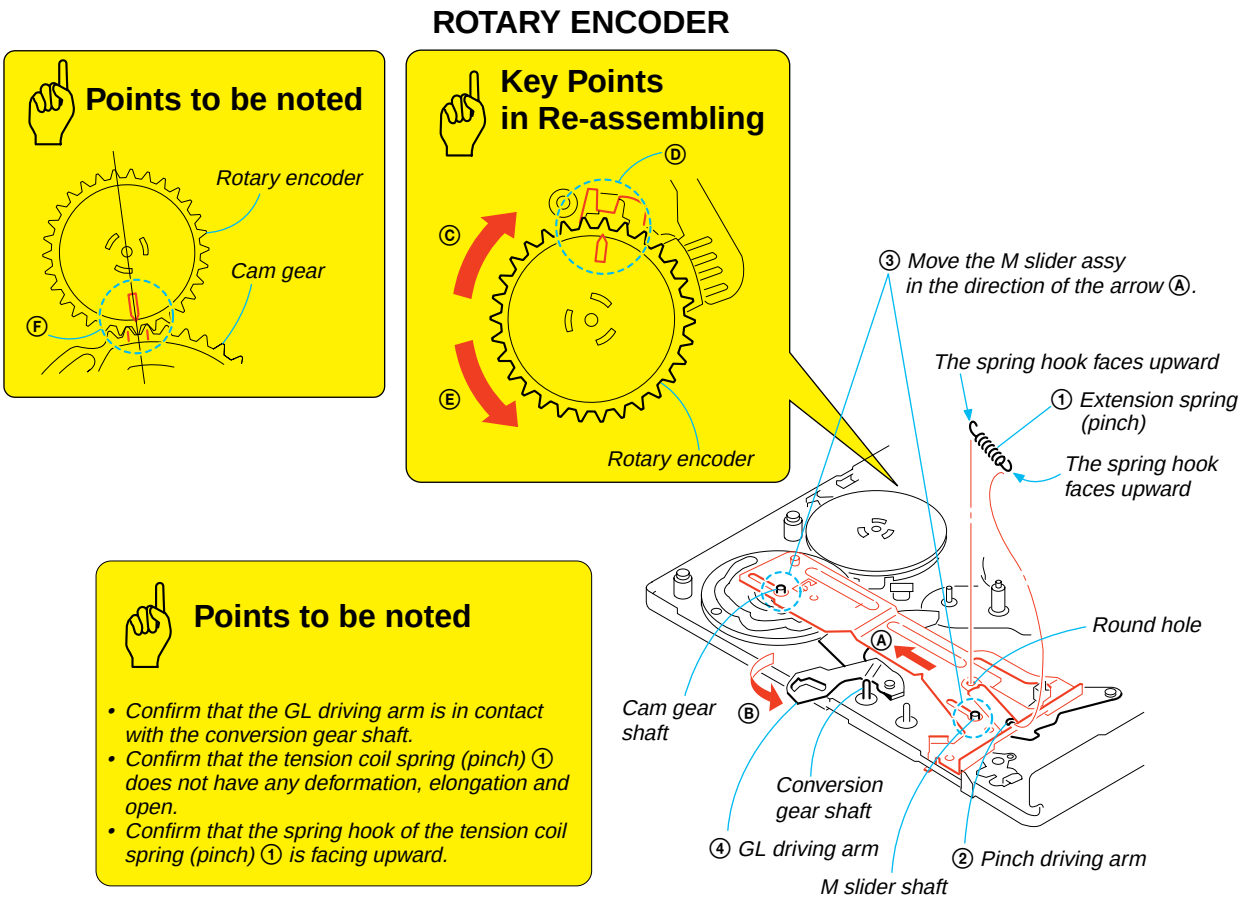
1) Remove an end of the tension spring (pinch) ① from the round hole of the M slider.
2) Remove another end of the tension spring (pinch) ① from the pinch driving arm ②.
3) Rotate the rotary encoder in the direction of the arrow Ⓔ, and align the ▲ mark of ratary encoder with the tooth bottom between second and third teeth Ⓕ. Move by hand in the direction of the arrow Ⓐ until the cam gear shaft and M slider shaft match with the shaft hole of the M slider assy ③.
4) Push in the direction of the arrow Ⓑ until the GL driving arm ④ gets in contact with the conversion gear shaft.

(to be continued to next items 5) through 7) on next page)

2. Attachment procedure

(continued from the previous items 1) through 5) on next page)

6) Move the conversion gear shaft in the direction opposite tot he arrow mark Ⓑ as far as it can go.
7) Rotate the rotary encoder in the direction of the arrow Ⓒ until the ▲ mark arrives at the position Ⓓ.
8) Install an end of the tension coil spring (pinch) ① on the pinch driving arm ② (in the way that spring hook faces upward).
9) Install another end of the tension coil spring (pinch) ① on the round hole of the M slider (in the way that spring hook faces upward).


ROTARY ENCODER
Points to be noted
Rotary encoder
Cam gear
Ⓕ
Key Points in Re-assembling
Ⓓ
Ⓒ
Ⓔ
Rotary encoder
③ Move the M slider assy in the direction of the arrow Ⓐ.
The spring hook faces upward
① Extension spring (pinch)
The spring hook faces upward
Round hole
Cam gear shaft
Ⓑ
Conversion gear shaft
④ GL driving arm
② Pinch driving arm
M slider shaft
Points to be noted
• Confirm that the GL driving arm is in contact with the conversion gear shaft.
• Confirm that the tension coil spring (pinch) ① does not have any deformation, elongation and open.
• Confirm that the spring hook of the tension coil spring (pinch) ① is facing upward.

3-30. M Slider Assy (2)

1. Removal procedure

(continued from the previous items 1) through 5) on previous page)

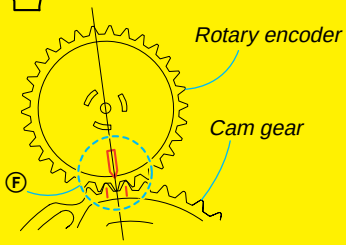
5) Remove the cam gear shaft and the M slider shaft from the two shaft holes Ⓐ of the M slider assy ①.
6) Remove the top tip Ⓑ of the M slider assy ① from the notch of the mechanical chassis in the direction of the arrow.
7) Remove the M slider assy ①.

2. Attachment procedure

1) Apply grease to the cam gear shaft and the M slider shaft (neck groove of the shaft where the M slider slides).
   Amount of grease: a ball of 1.0 mm diameter of grease
2) Align the hole of the pinch driving arm and the hole of the mechanical chassis.
3) Insert the top tip Ⓑ of the M slider assy ① into the notch of the mechanism chassis, and at the same time install the M slider assy ① into the GL driving arm.
4) Align the ▲ mark of rotary encoder with the tooth bottom between second and third teeth Ⓕ.
5) Install the cam gear shaft and the M slider shaft into the tow shaft holes Ⓐ of the M slider assy.

(to be continued to next items 6) through 9) on previous page)

Points to be noted



M SLIDER ASSY

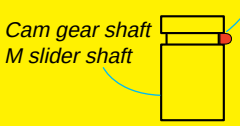
Key Points in Re-assembling

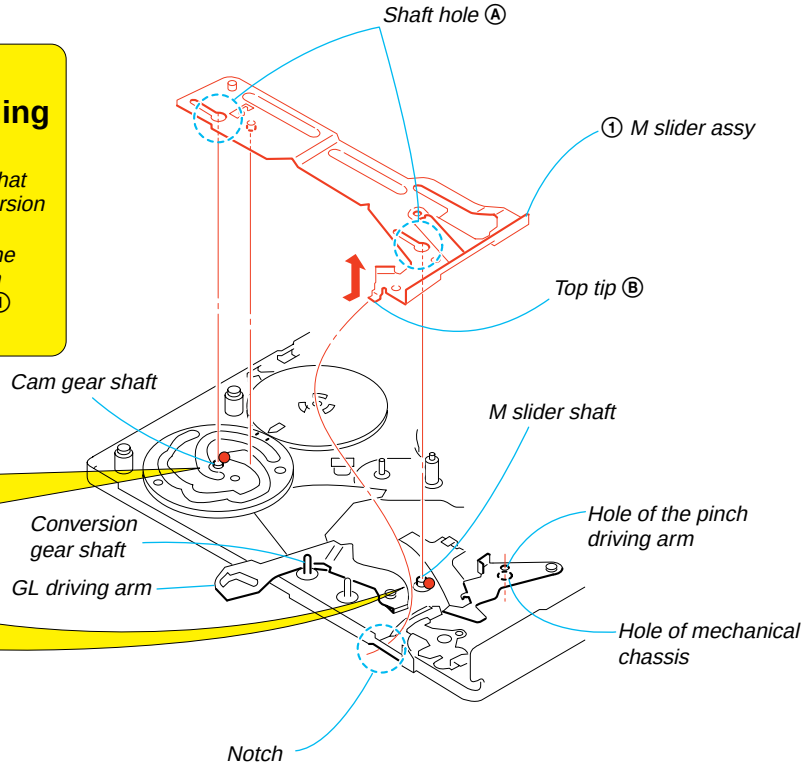
- *When installing the M slider assy ①, confirm that the GL driving arm is in contact with the conversion gear shaft.*
- *Confirm that you have not forgotten to insert the top tip Ⓑ of the M slider assy ① into the notch of the mechanical chassis. The M slider assy ① should not have any deformation.*

Apply Grease

Points to be noted

Apply grease when installing it
Amount of grease: a ball of 1.0 mm diameter of grease
Neck groove of the shaft where the M slider slides





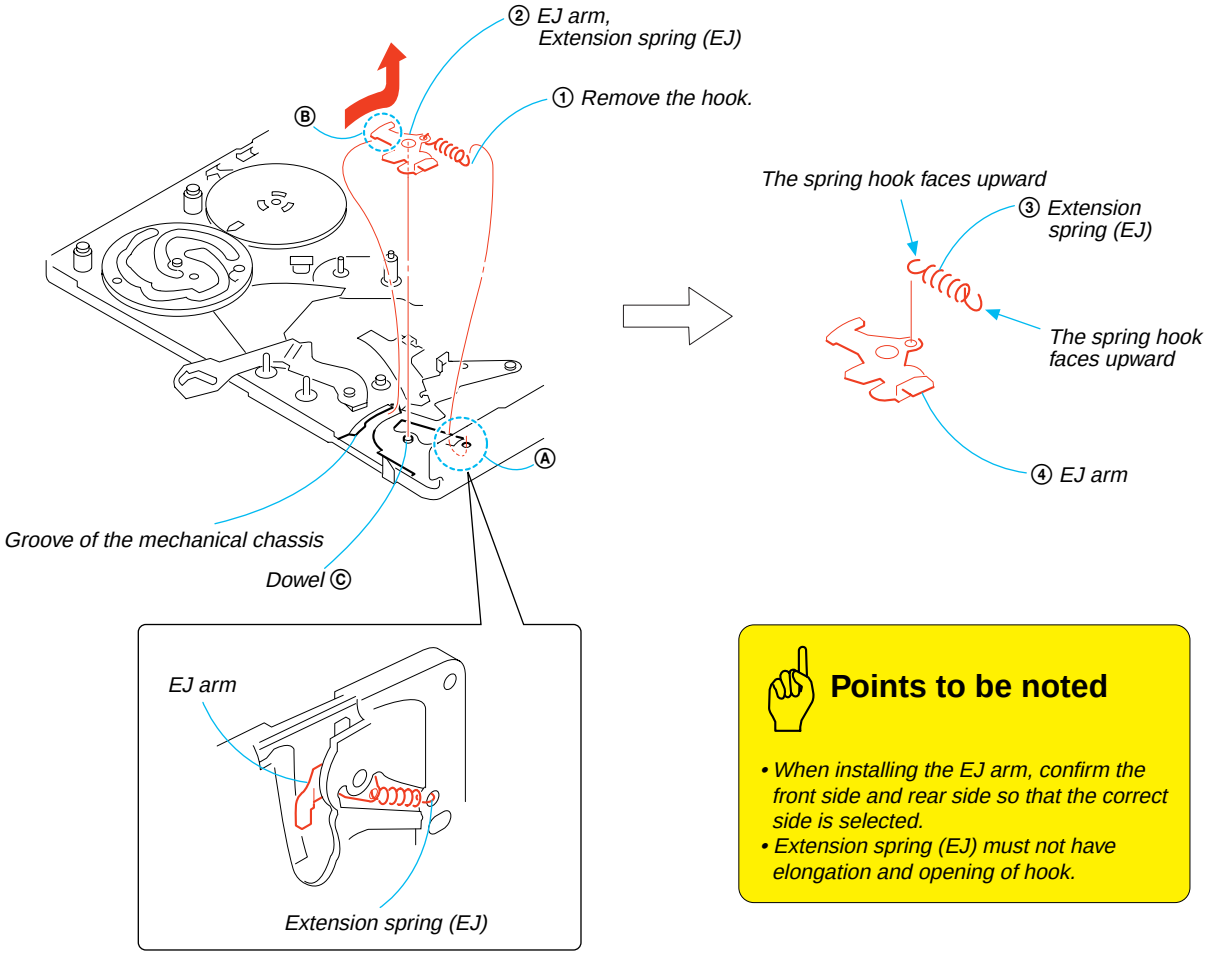
3-31. EJ Arm

1. Removal procedure

1) Remove the hook ① of the tension coil spring (EJ arm) ③ that is hooked on the round hole Ⓐ.
2) Remove the EJ arm and the tension coil spring (EJ arm) ② all together in the direction of the arrow.
3) Remove the tension coil spring (EJ arm) ③ from the EJ arm ④.

2. Attachment procedure

1) Install the tension coil spring (EJ arm) ③ into the round hole of the EJ arm ④ with the hook facing upward.
2) Insert the top tip (bent) portion Ⓑ of the EJ arm ④ into the groove of the mechanical chassis. Insert the dowel Ⓒ into the round hole of the EJ arm.
3) Insert he tension coil spring ① into the round hole Ⓐ of the mechanical chassis with the hook facing upward.



Points to be noted

- *When installing the EJ arm, confirm the front side and rear side so that the correct side is selected.*
- *Extension spring (EJ) must not have elongation and opening of hook.*

3-32. Cam Gear and GL Driving

1. Removal procedure

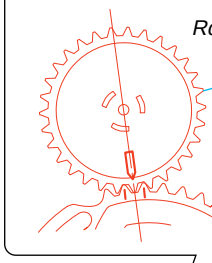
1) Rotate the GL driving arm Ⓗ block assy in the direction of the arrow Ⓘ until it contacts with the conversion gear shaft.
2) Remove the cam gear ②.
3) Remove the GL driving arm ③.

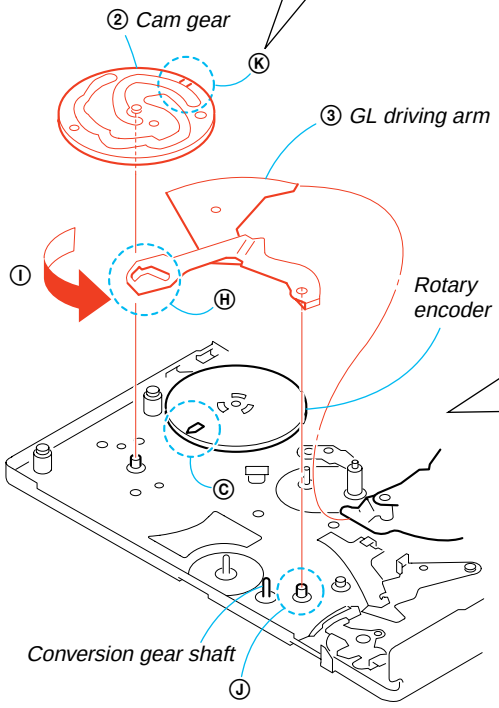
2. Attachment procedure

1) Insert the GL driving arm ③ into the shaft Ⓙ of the mechanical chassis and rotate the GL driving arm Ⓗ block assy in the direction of the arrow Ⓘ until it contacts with the conversion gear shaft.
2) Confirm the front side and rear side of the cam gear ② so that the correct side is selected. Install the cam gear ② while matching phase of the ▲ mark Ⓒ with the second tooth valley Ⓚ and the third tooth valley Ⓚ of the cam gear.
3) Apply grease to the specified locations Ⓐ to Ⓖ of the cam gear.

Matching Phase

Key Points in Re-assembling



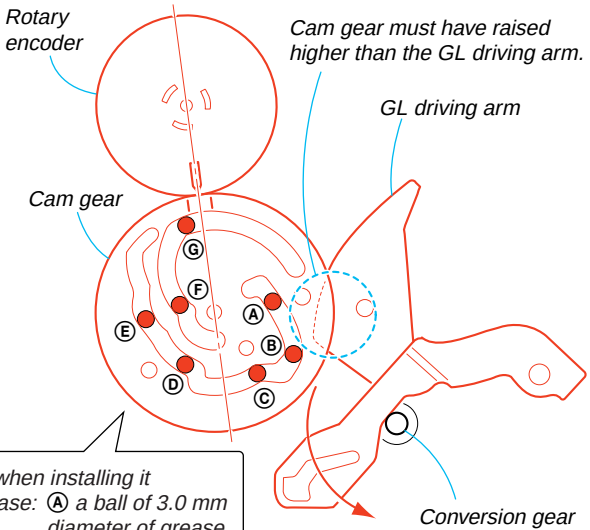


Points to be noted

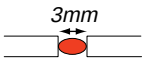
- *Confirm that the phase of the cam gear and that of the rotary encoder are matched and in phase.*
- *Confirm that the cam gear overrides on the GL driving arm.*
- *Confirm that the GL driving arm is contact with the conversion shaft.*
- *Do not apply grease to any locations other than the specified location. Apply grease of the specified amount.*

Notes When Applying Grease and During Installation

Key Points in Re-assembling



Apply grease when installing it
Amount of grease: Ⓐ a ball of 3.0 mm diameter of grease Ⓑ to Ⓖ a ball of 2.0 mm diameter of grease



Sides of the both grooves

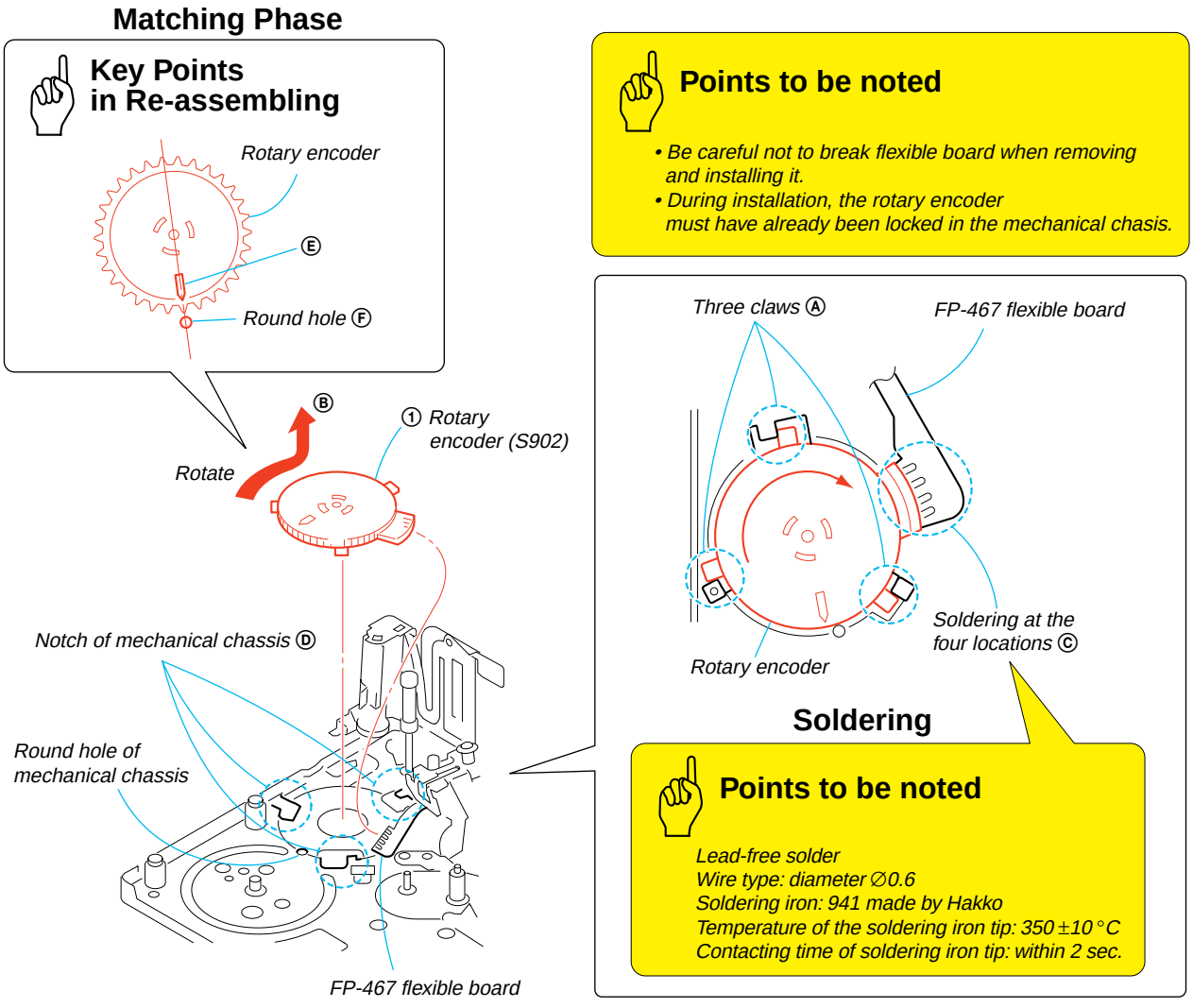
3-33. Rotary Encoder (S902)

1. Removal procedure

1) Remove the three claws Ⓐ of the rotary encoder (S902) ① from the three notches of the mechanical chassis.
2) Rotate the rotary encoder (S902) ① in the direction of the arrow Ⓑ and remove.
3) Remove soldering (at the four locations) Ⓒ to which the rotary encoder (S902) is attached.

2. Attachment procedure

1) Make soldering (at the four locations) Ⓒ so that the rotary encoder (S902) ① is connected to the FP-467 flexible board.
2) Place the rotary encoder (S902) ① on top of the notch Ⓓ of the mechanical chassis. Lock the three claws Ⓐ of the rotary encoder (S902) ① into the notches Ⓓ of the mechanical chassis.
3) Match the phase of the ▲ mark Ⓔ of the rotary encoder (S902) ① with the phase of the round hole Ⓕ of the mechanical chassis.


Matching Phase
Key Points in Re-assembling
Rotary encoder
Ⓔ
Round hole Ⓕ
Ⓑ
① Rotary encoder (S902)
Rotate
Notch of mechanical chassis Ⓓ
Round hole of mechanical chassis
FP-467 flexible board
Points to be noted
• Be careful not to break flexible board when removing and installing it.
• During installation, the rotary encoder must have already been locked in the mechanical chasis.
Three claws Ⓐ
FP-467 flexible board
Soldering at the four locations Ⓒ
Rotary encoder
Soldering
Points to be noted
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Temperature of the soldering iron tip: 350 ±10 °C
Contacting time of soldering iron tip: within 2 sec.

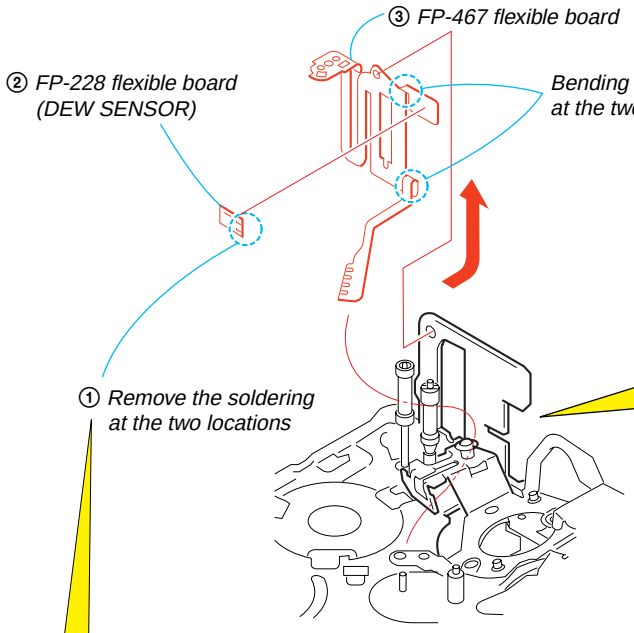
3-34. FP-228 Flexible Board (DEW SENSOR) and FP-467 Flexible Board

1. Removal procedure

1) Remove the soldering at the two locations ① and remove the FP-228 flexible board (DEW SENSOR) ②.
2) Remove the FP-467 flexible board ③ from the mechanical chassis in the direction of the arrow.

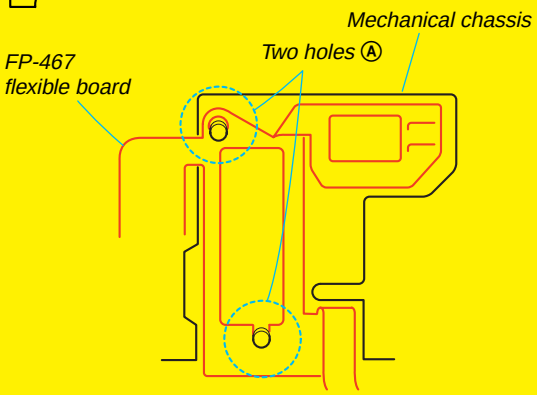
2. Attachment procedure

1) Match the phase of the two holes Ⓐ of the FP-467 flexible board ③ with the holes of the mechanical chassis, and attach them each other.
2) Attach the FP-228 flexible board (DEW SENSOR) ② to the FP-467 flexible board ③.
3) Connect the terminals at the two locations ① by soldering.


③ FP-467 flexible board
② FP-228 flexible board (DEW SENSOR)
Bending the flexible board at the two locations
① Remove the soldering at the two locations

FP-467 FLEXIBLE BOARD

Key Points in Re-assembling



Soldering

Points to be noted

Lead-free solder
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.

- *Be careful not to create the hollow soldering, Br, and there must be no lacking of parts. There must not be solder ball.*
- *Be careful not to contact the soldering iron tip too long time.*

Points to be noted

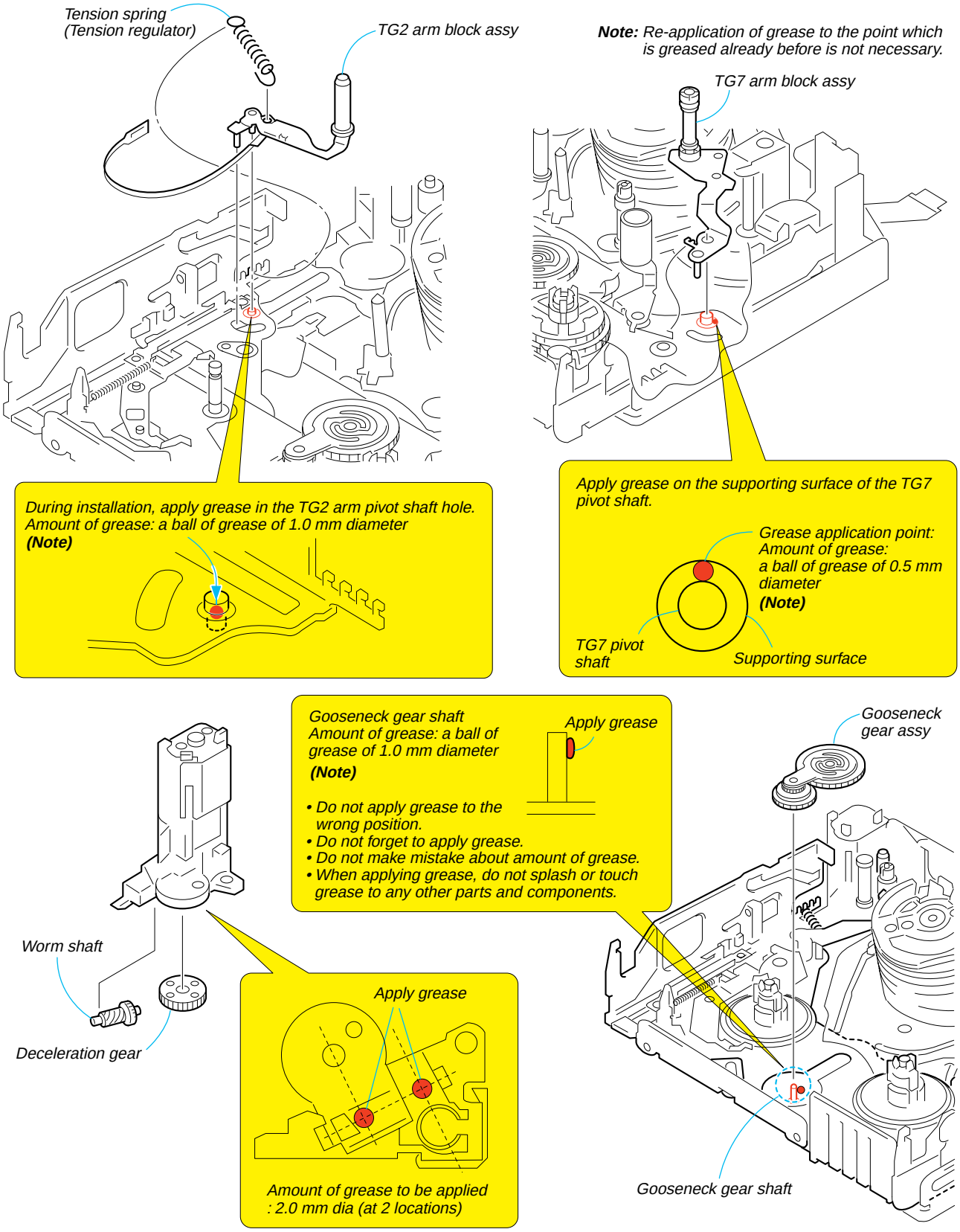
- *Be careful not to break the flexible board to have open circuit when installing and removing it.*
- *Be careful that flexible board must not override on anything.*
- *Be careful that the two bending portions of the FP-467 flexible board must not be bent excessively that results in open circuit and breakdown of flexible board.*
- *Do not rub the DEW sensor with any rubbing bars.*

2003.01.30

HELP

Application of grease, soldering method and precautions, and phase matching adjustment are compiled and below.

Apply grease (1)

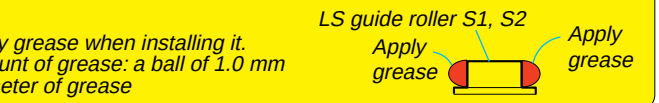

Tension spring
(Tension regulator)
TG2 arm block assy
Note: Re-application of grease to the point which is greased already before is not necessary.
TG7 arm block assy
During installation, apply grease in the TG2 arm pivot shaft hole.
Amount of grease: a ball of grease of 1.0 mm diameter
(Note)
Apply grease on the supporting surface of the TG7 pivot shaft.
Grease application point:
Amount of grease:
a ball of grease of 0.5 mm diameter
(Note)
TG7 pivot shaft
Supporting surface
Gooseneck gear shaft
Amount of grease: a ball of grease of 1.0 mm diameter
(Note)
Apply grease
• Do not apply grease to the wrong position.
• Do not forget to apply grease.
• Do not make mistake about amount of grease.
• When applying grease, do not splash or touch grease to any other parts and components.
Gooseneck gear assy
Worm shaft
Deceleration gear
Apply grease
Amount of grease to be applied
: 2.0 mm dia (at 2 locations)
Gooseneck gear shaft

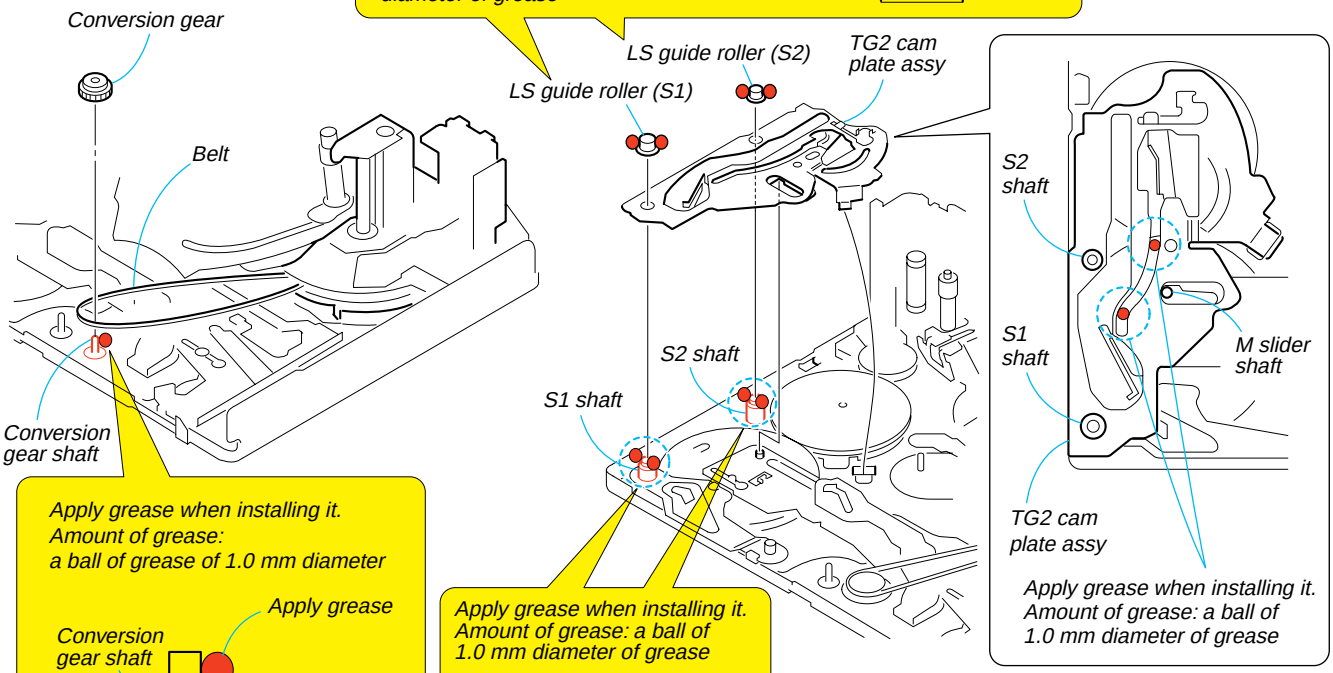
Apply grease (2)

Apply Grease

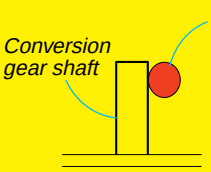
Points to be noted

Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease



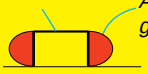


Apply grease when installing it.
Amount of grease:
a ball of grease of 1.0 mm diameter



Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

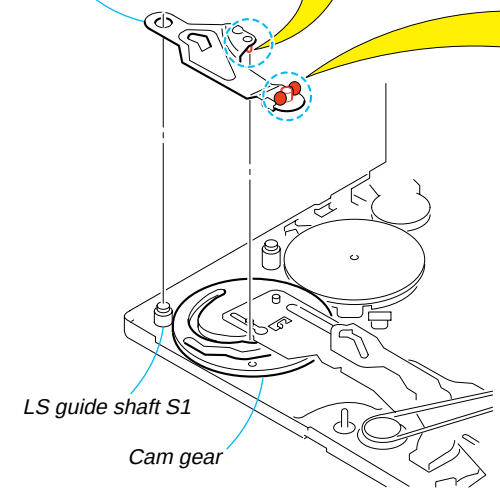
S1 shaft, S2 shaft



Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

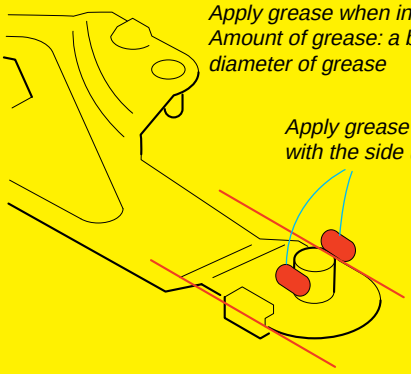
Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

LS arm shaft

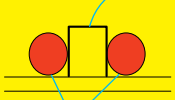


Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease

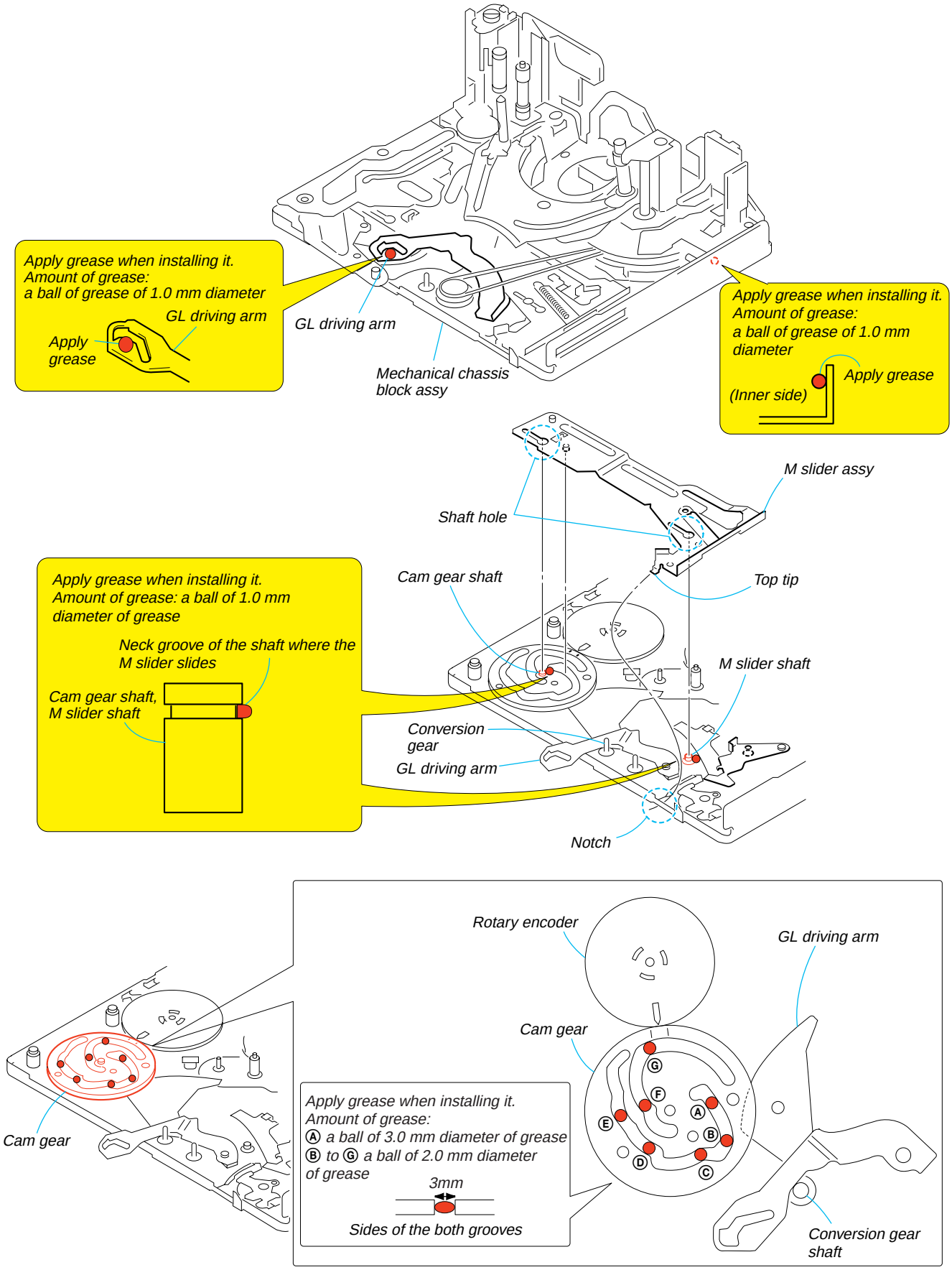
Apply grease in parallel with the side (red line)



LS arm shaft



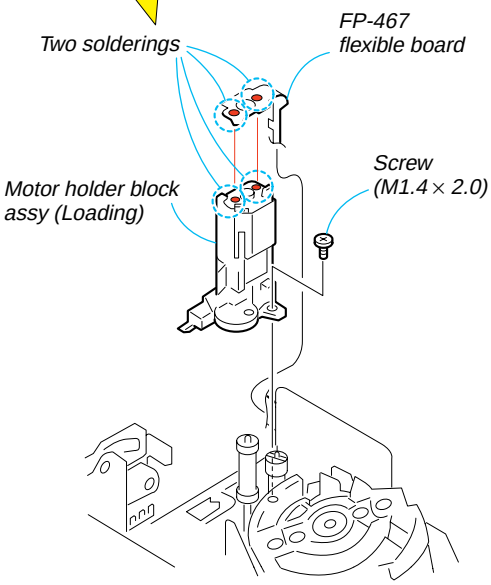
Apply grease (3)

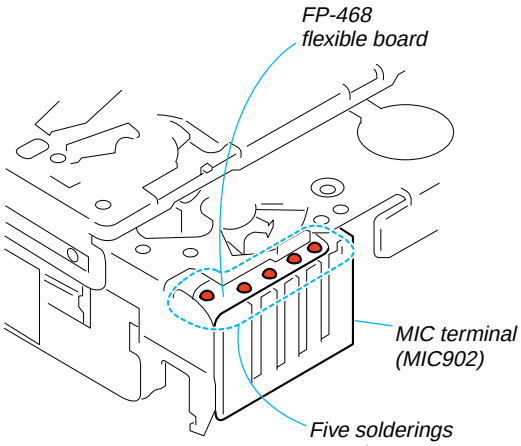

Apply grease when installing it.
Amount of grease:
a ball of grease of 1.0 mm diameter
GL driving arm
Apply grease
GL driving arm
Mechanical chassis block assy
Apply grease when installing it.
Amount of grease:
a ball of grease of 1.0 mm diameter
Apply grease
(Inner side)
M slider assy
Shaft hole
Top tip
Cam gear shaft
M slider shaft
Apply grease when installing it.
Amount of grease: a ball of 1.0 mm diameter of grease
Neck groove of the shaft where the M slider slides
Cam gear shaft, M slider shaft
Conversion gear
GL driving arm
Notch
Rotary encoder
GL driving arm
Cam gear
Cam gear
Apply grease when installing it.
Amount of grease:
Ⓐ a ball of 3.0 mm diameter of grease
Ⓑ to Ⓖ a ball of 2.0 mm diameter of grease
3mm
Sides of the both grooves
Conversion gear shaft

Soldering (1)

Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of soldering iron tip : within 2 sec.

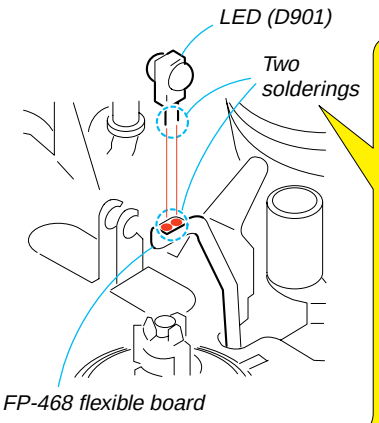
- Be careful not to create the hollow soldering, Br, and there must be no lacking of parts.
- Be careful not to melt the detent of the holder.
- Be careful not to melt the END cover.
- Be careful not to break the terminals due to attaching the soldering iron too long time.



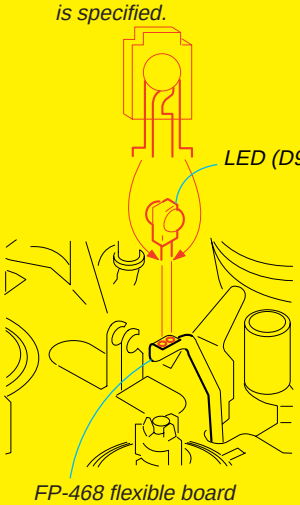


Use the rubber finger tip cover
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC

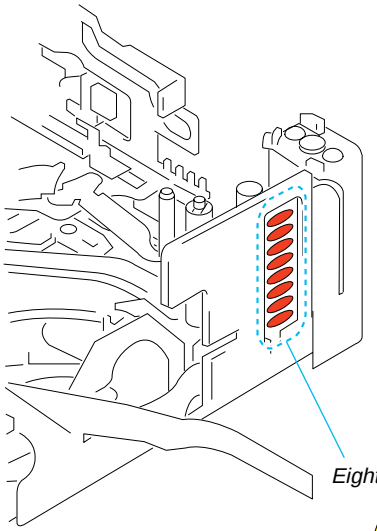
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec



Direction of the terminal is specified.



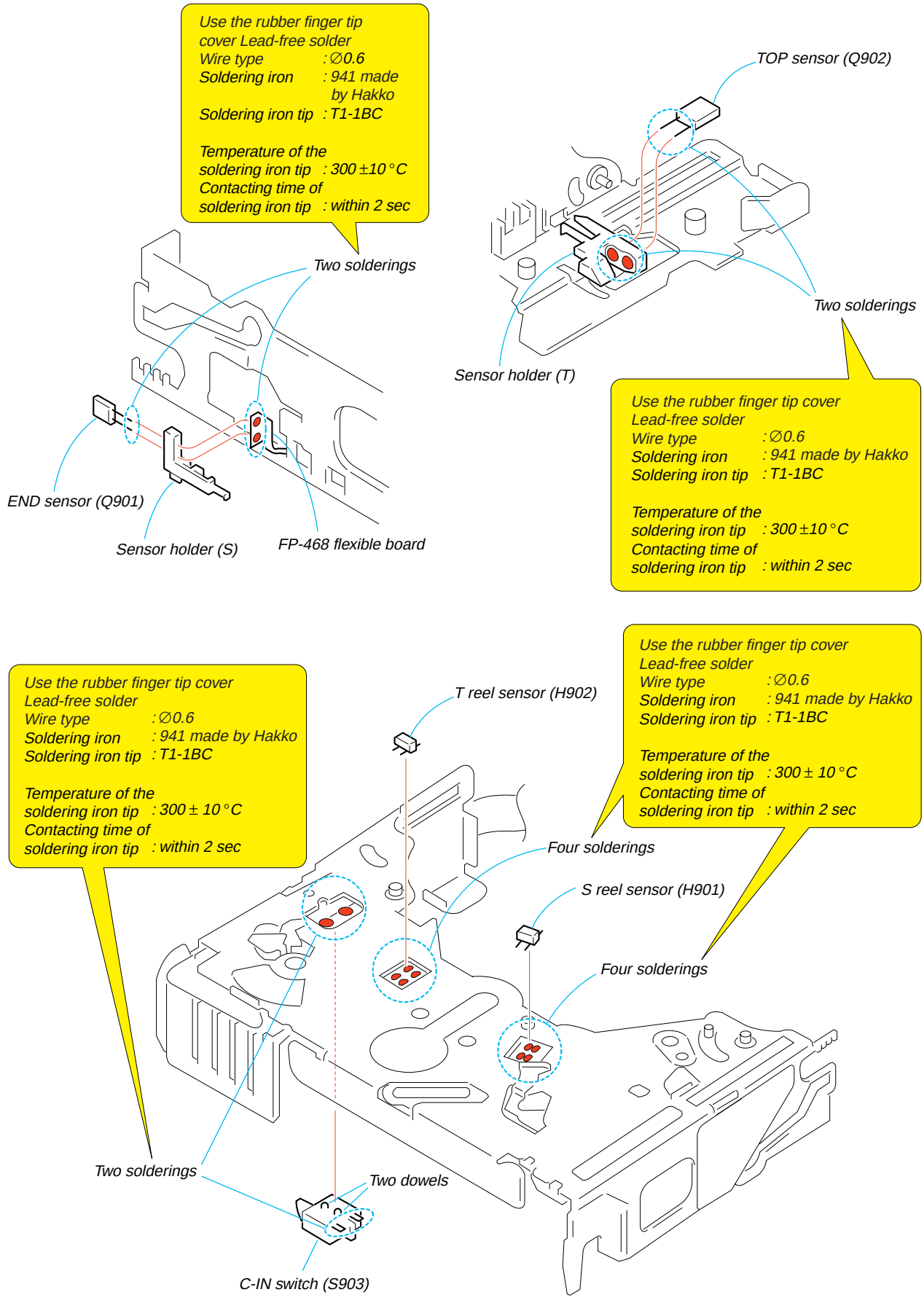
Rubber finger tip protection cover must be used.
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Soldering iron tip: T1-1BC
Temperature of the soldering iron tip: 300 ±10 °C
Contacting time of soldering iron tip: within 2 sec.



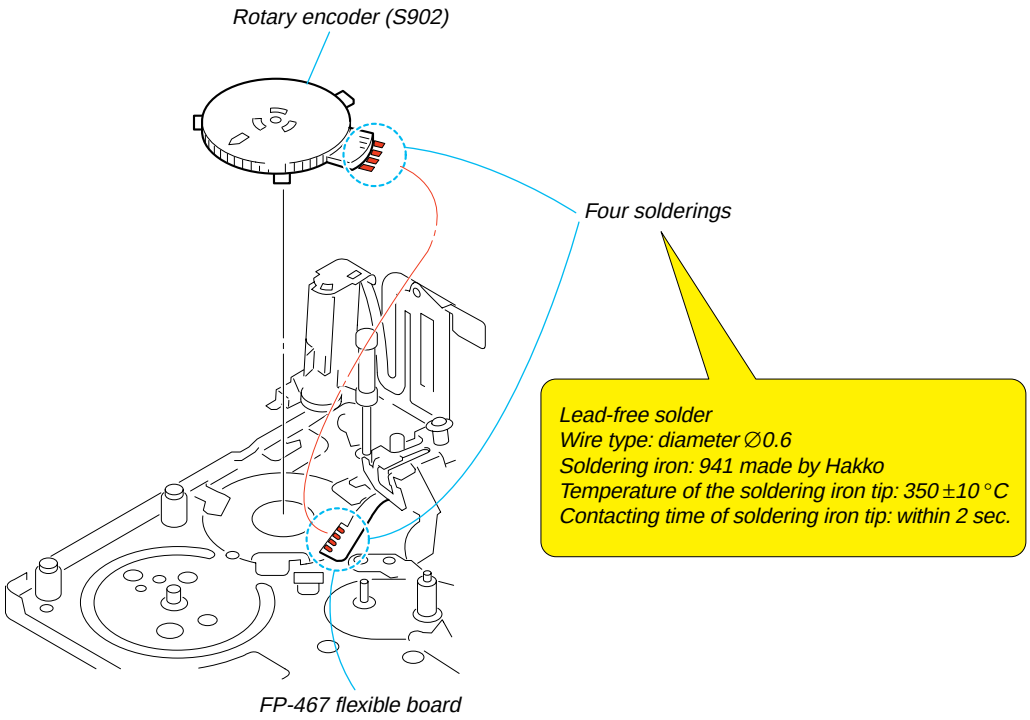
Lead-free solder
Wire type: diameter 0.6 ∅
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.

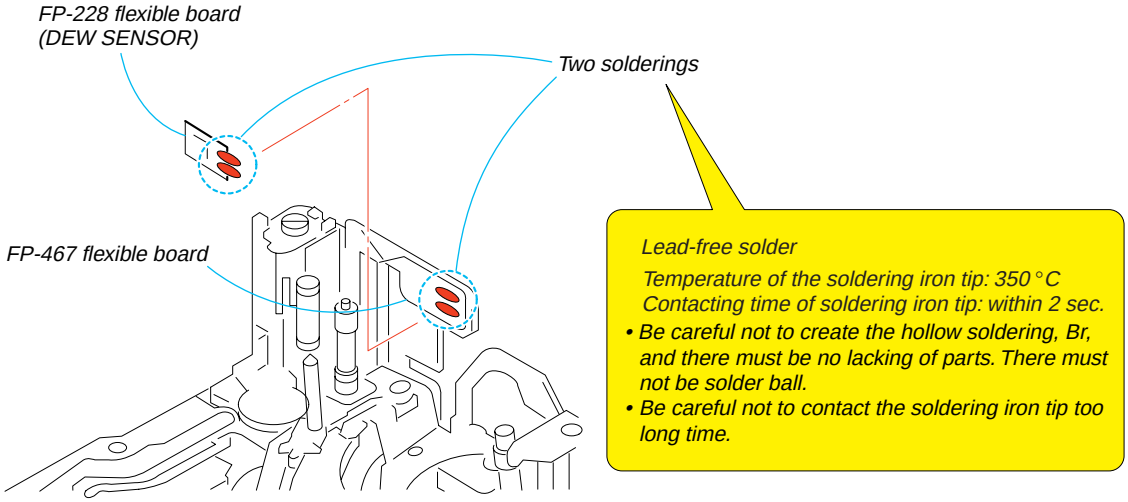
- Be careful not to create the hollow soldering, Br, and there must be no lacking of parts.
- Be careful not to crash the grip jog to the TG1 guide.

Soldering (2)

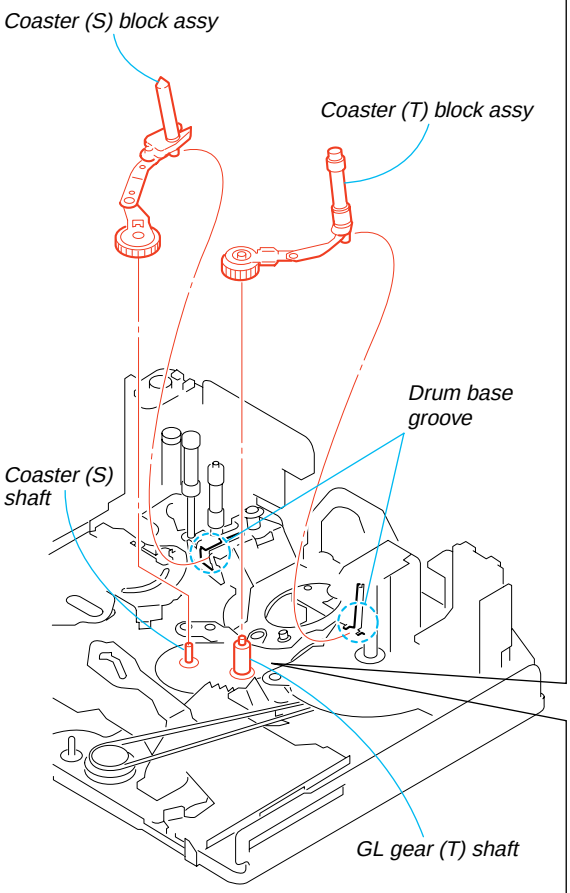

Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec
Two solderings
END sensor (Q901)
Sensor holder (S)
FP-468 flexible board
TOP sensor (Q902)
Two solderings
Sensor holder (T)
Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ±10 °C
Contacting time of soldering iron tip : within 2 sec
Use the rubber finger tip cover Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko
Soldering iron tip : T1-1BC
Temperature of the soldering iron tip : 300 ± 10 °C
Contacting time of soldering iron tip : within 2 sec
T reel sensor (H902)
Four solderings
S reel sensor (H901)
Four solderings
Two solderings
Two dowels
C-IN switch (S903)

Soldering (3)

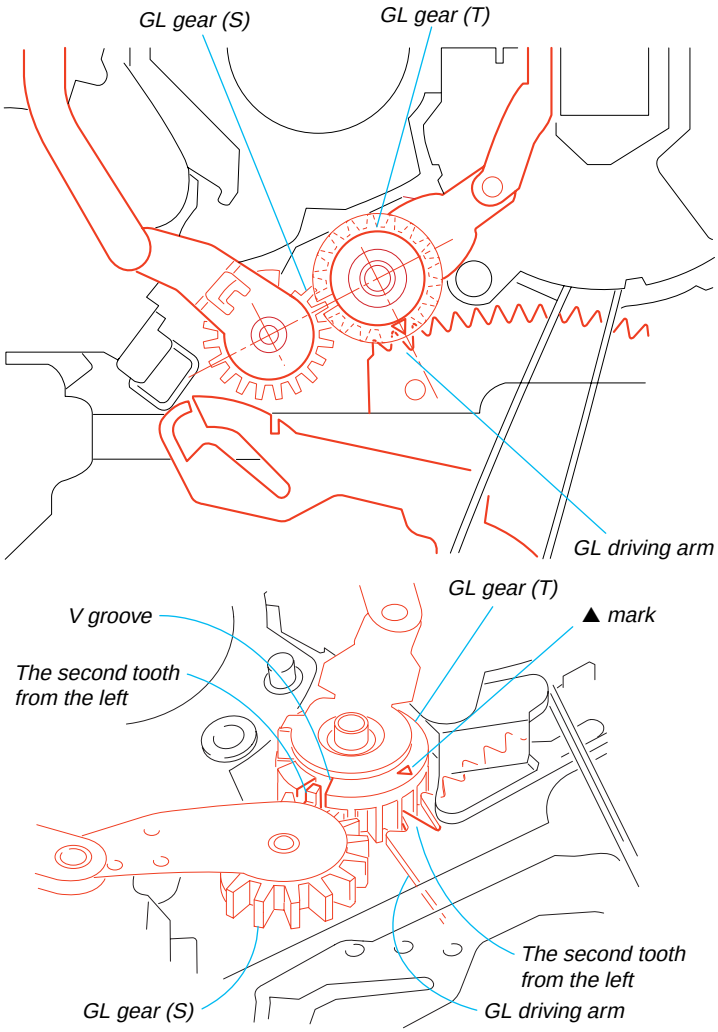

Rotary encoder (S902)
Four solderings
Lead-free solder
Wire type: diameter ∅0.6
Soldering iron: 941 made by Hakko
Temperature of the soldering iron tip: 350 ±10 °C
Contacting time of soldering iron tip: within 2 sec.
FP-467 flexible board


FP-228 flexible board
(DEW SENSOR)
Two solderings
FP-467 flexible board
Lead-free solder
Temperature of the soldering iron tip: 350 °C
Contacting time of soldering iron tip: within 2 sec.
• Be careful not to create the hollow soldering, Br, and there must be no lacking of parts. There must not be solder ball.
• Be careful not to contact the soldering iron tip too long time.

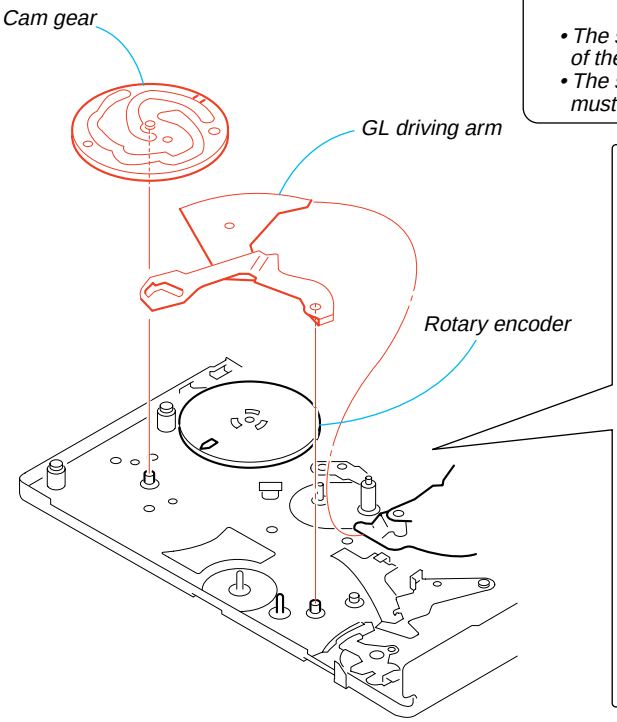
Matching Phase

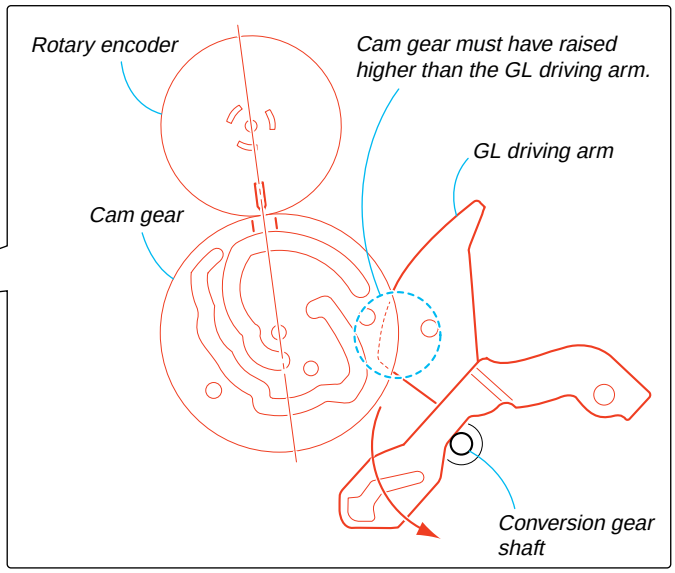


When re-assembling, adjust the gear phase at the three positions.



- The second tooth from the left of the GL gear (S) and the V-groove of the GL gear (T) must be in phase.
- The second tooth from the left of the GL drive arm and the ▲ mark must be in phase.





4. Adjustment

4-1. FWD Position Adjustment

When the TG2 arm block assy or the band adjuster or the S reel table assy is replaced or removed, the following adjustment becomes necessary.

- TG2 FWD Position Adjustment (Refer to section 4-4.)
- FWD Back Tension Adjustment (Refer to section 4-4.)
- Reel Table (RVS) Check (Refer to section 4-2.)

1) Set the R/P mode and check the TG2 guide position as follows.
   - Confirm that the distance between the TG2 guide and the L motor is 1.0 mm. If not, perform adjustment as follows.
2) Loosen the fixing screw. Use the adjustment screwdriver (Ref No. J-8) and adjust the band adjuster for the distance of 1.0 mm between the TG2 guide and the L motor. Upon completion of adjustment, tighten the fixing screw securely as follows.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 ± 0.1 kgf•cm)
   Note: Upon completion of adjustment, confirm that TG2 can move with some margin in the direction of the arrow Ⓐ.

4-2. Reel Torque Check

1. Check Procedure

[FWD torque]

1) Set the mini DV torque cassette (Ref. No. J-6).
2) Establish the FWD mode. Confirm that the center value of the T reel table torque value is in the range of 0.49 to 0.93 (mN•m) (5.0 to 9.5 g•cm) within deviation of 0.39 (mN•m) (4.0 g•cm)

[RVS torque]

1) Set the mini DV torque cassette (Ref. No. J-6).
2) Establish the RVS mode. Confirm that the center value of the S reel table torque value is in the range of 1.57 to 2.45 (mN•m) (16.0 to 25.0 g•cm)

If the above specification is not satisfied, check the tension regulator band for correct operation. If operation of the tension regulator band has no problem, replace the respective reel tables.

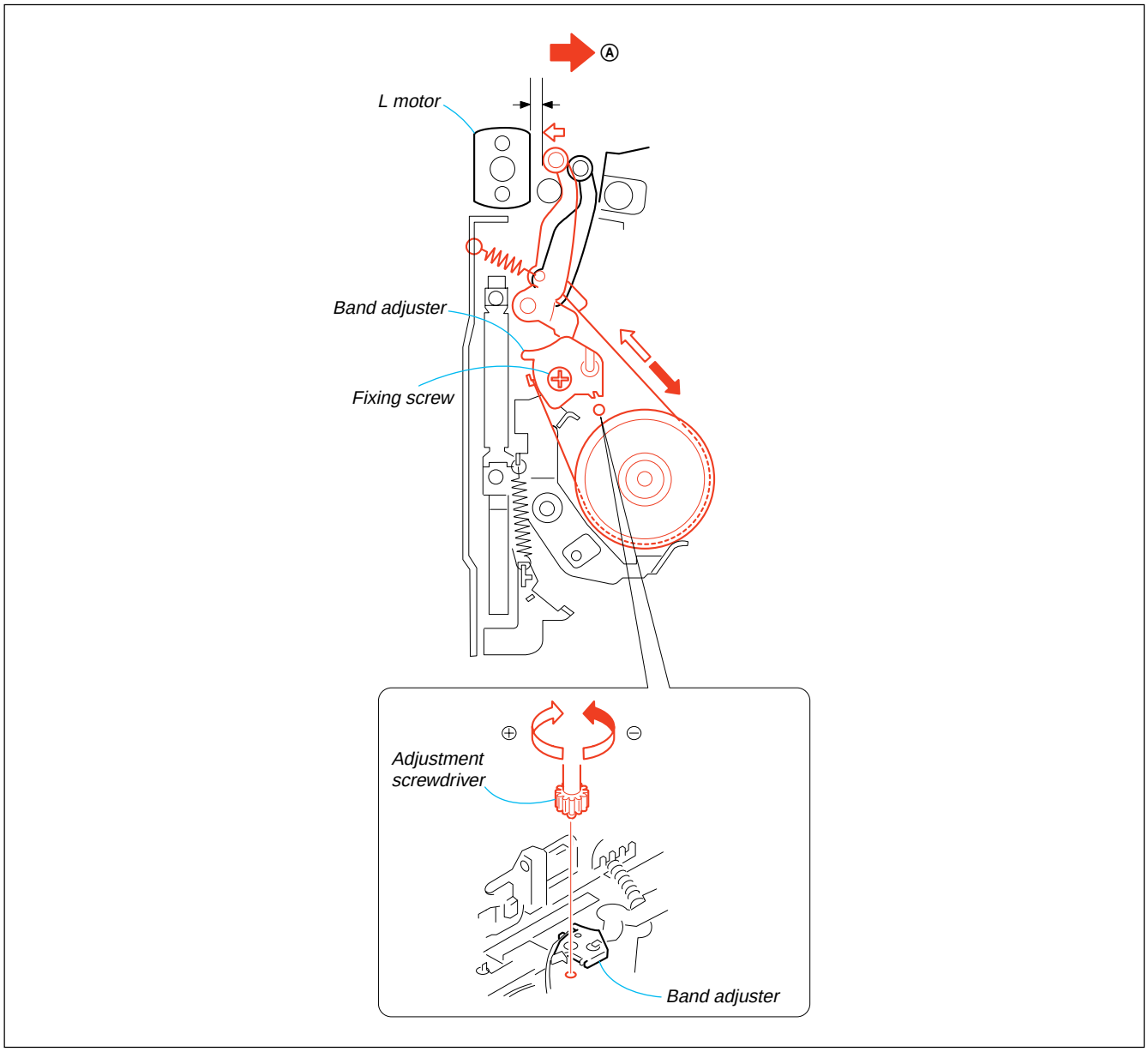


Fig. 4-1

4-3. LS Cam Plate Position Adjustment

1. Adjustment Procedure

1) Loosen the LS cam plate fixing screw (special head screw M1.4 × 1.4) by 180 degrees.
2) Set the STOP mode.
3) While pressing the center of the LS chassis block with the force of 1.5 ± 0.5 N (150 gf ± 50 gf), move the LS cam plate toward the S reel side with the force of 0.147 ± 0.01 N•m (2300 gf ± 200 gf) and tighten the LS cam plate fixing screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.098 ± 0.01 N•m (1.0 ± 0.1 kgf•cm)

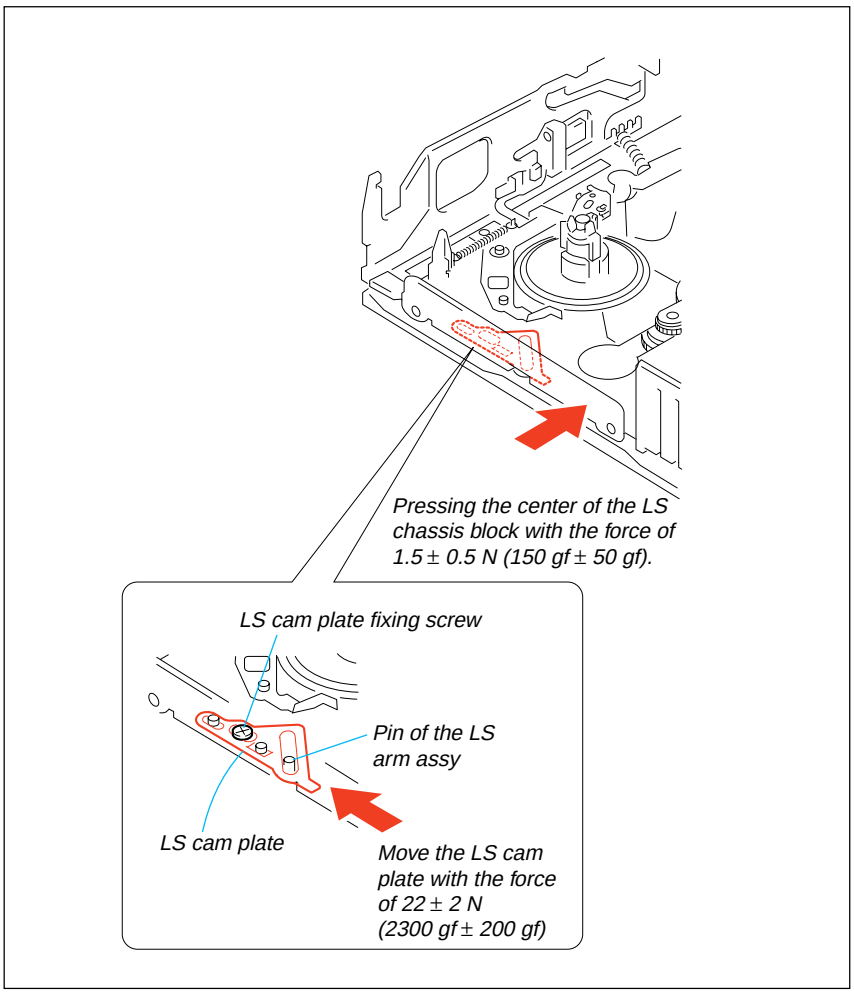

Pressing the center of the LS chassis block with the force of 1.5 ± 0.5 N (150 gf ± 50 gf).
LS cam plate fixing screw
Pin of the LS arm assy
LS cam plate
Move the LS cam plate with the force of 22 ± 2 N (2300 gf ± 200 gf)

Fig. 4-2

4-4. Tape Path Adjustment

4-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan, pinch roller) referring to section 2-2.
2) Connect the adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
3) Connect an oscilloscope to CN1004 of the VC-312 board via the CPC-7 jig (J-6082-382-A). (In the case of DCR-TRV22K)
   Oscilloscope CH1: VC-312 board CN1004 pin② (Note 1)
   EXT. TRIG: VC-312 board CN1004 pin④
   Note 1: Connect CN1004 pin② and pin⑥ (GND) with a 75-ohm resistor (1-247-804-11).
4) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
5) Select page: 0, address: 10 and set data: 00. (Note 2)
6) Select page: 3, address: 26 and set data: 31, and press the PAUSE button. (Note 2)
7) Select page: 3, address: 33 and set data: 08. (Note 2)
8) Confirm that the RF waveform on the scope is flat at both of the entrance side and the exit side. (Refer to Fig. 4-4A.)
   If the RF waveform is not flat either at the entrance side or the exit side (refer to Fig. 4-4 B and C), perform the adjustment of section 6-2 and later.
9) When the required conditions of step 8) are satisfied, perform [Required Work upon Completion of Adjustment] as described below upon completion of adjustment/check.

[Required Work upon Completion of Adjustment]

1) Connect the adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
2) Select page: 0, address: 10 and set data: 00. (Note 2)
3) Select page: 3, address: 26 and set data: 00, and press the PAUSE button. (Note 2)
4) Select page: 3, address: 33 and set data: 00. (Note 2)
   Note 2: Page and address numbers differ depending on each model. Please to Service Manual of the respective models. Page and address numbers of DCR-TRV22K are shown in this manual.

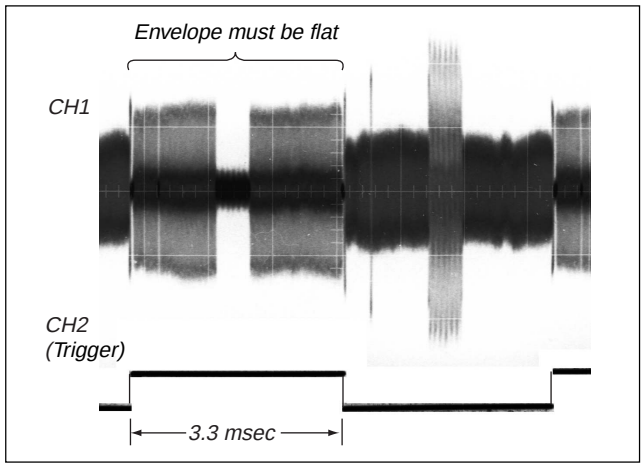


Fig. 4-3

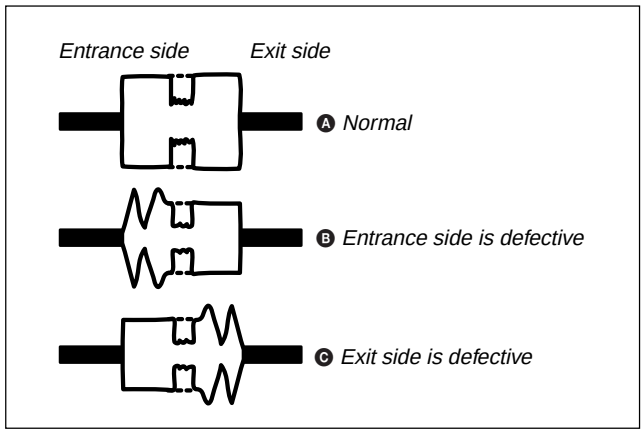


Fig. 4-4

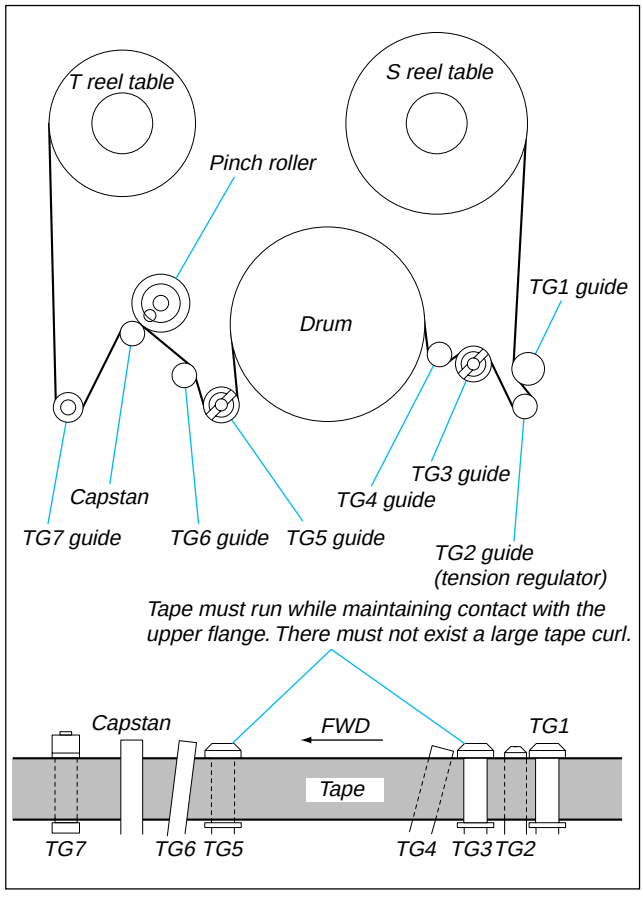


Fig. 4-5

4-2. TG3/TG5 Guide Coarse Adjustment

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Adjust the TG3 and TG5 guides until the RF envelope waveform becomes flat. (Refer to Fig. 4-8.)

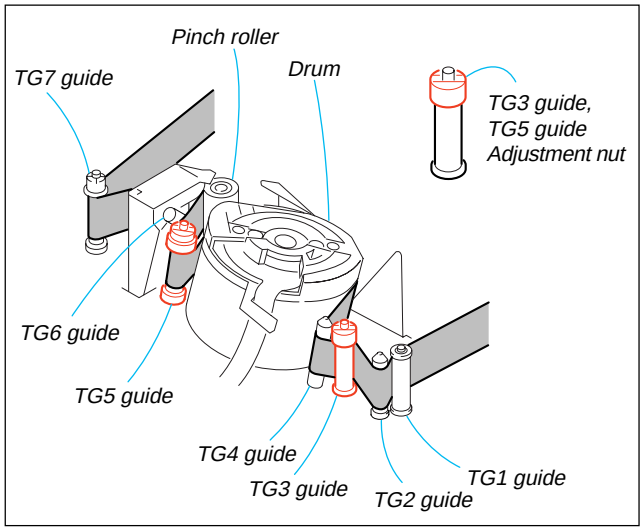


Fig. 4-6

4-3. FWD Back Tension Adjustment

1) Set the mini DV torque cassette (Ref. No. J-6) and establish the FWD mode.
2) Confirm that the S side torque cassette reading value is in the range of 0.2 to 0.3 mN•m (2.0 to 3.0 g•cm) including deviation. If the measurement value does not satisfy the specifications, perform the following adjustment.
   - If the measurement value is higher than the specification: (Decreases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓑ.
   - If the measurement value is lower than the specification: (Increases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓐ.

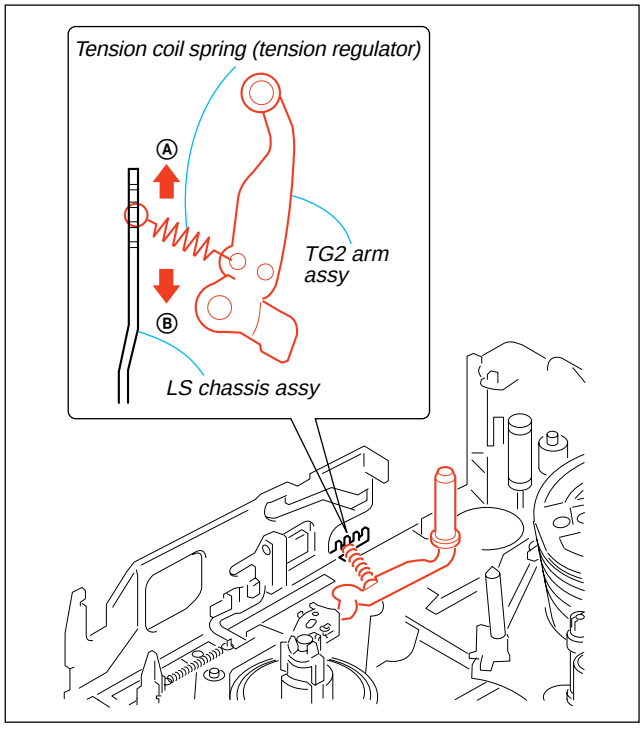


Fig. 4-7

4-4. TG3/TG5 Guide Fine Adjustment

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Adjust the TG3 so that the RF envelope has the larger amplitude at the entrance side first, than adjust TG3 guide for flat amplitude. (Refer to Fig. 4-8.)
3) Adjust the TG5 so that the RF envelope has the larger amplitude at the exit side first, than adjust TG5 guide for flat amplitude. (Refer to Fig. 4-9.)

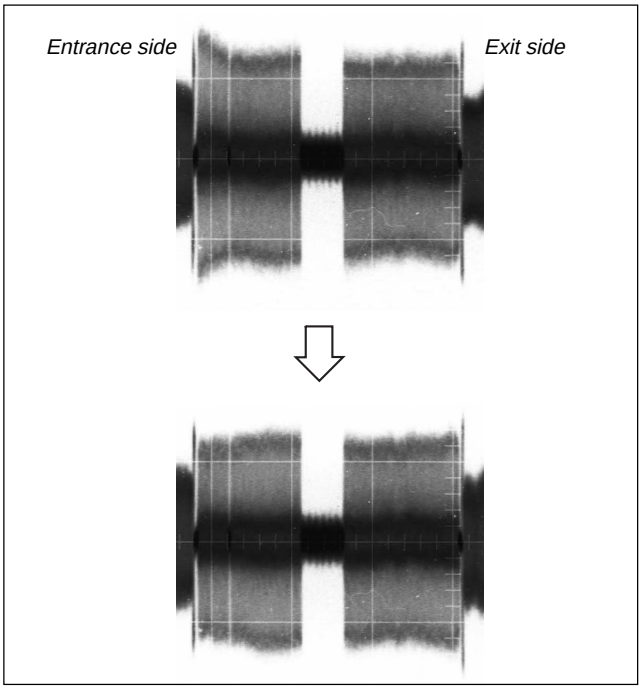


Fig. 4-8

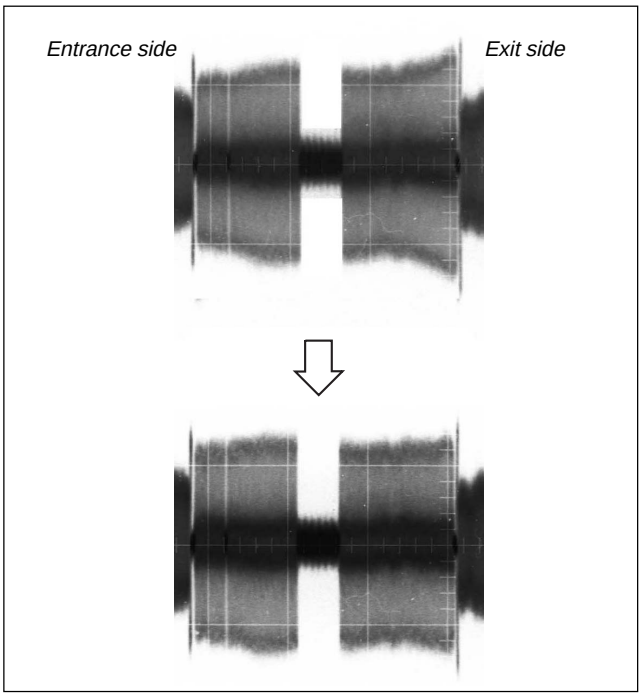


Fig. 4-9

4-5. Tape Run Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5). Establish the CUE mode first then the REV mode. Confirm in the respective modes that there are no large tape curls at the upper flange of TG3 and TG5. Then confirm in the respective modes that there are no large tape curls at the upper and lower flanges of TG1 and TG7.

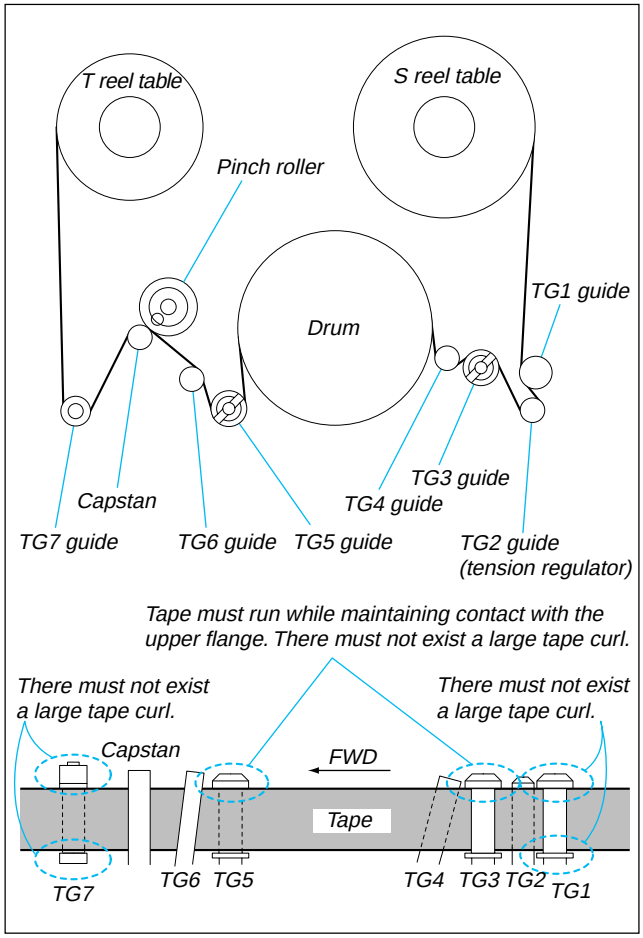


Fig. 4-10

4-6. Check upon Completion of Adjustment

1. Tracking Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Establish the CUE (or REV) mode. Take the amplitude (A) in this mode as the 100% waveform amplitude. (Refer to Fig. 4-11.)
3) Establish the FWD mode. Confirm that the difference between the minimum (E min) and the maximum (E max) is less than 30%. (When taking the amplitude (A) in the CUE or REV mode as 100%)

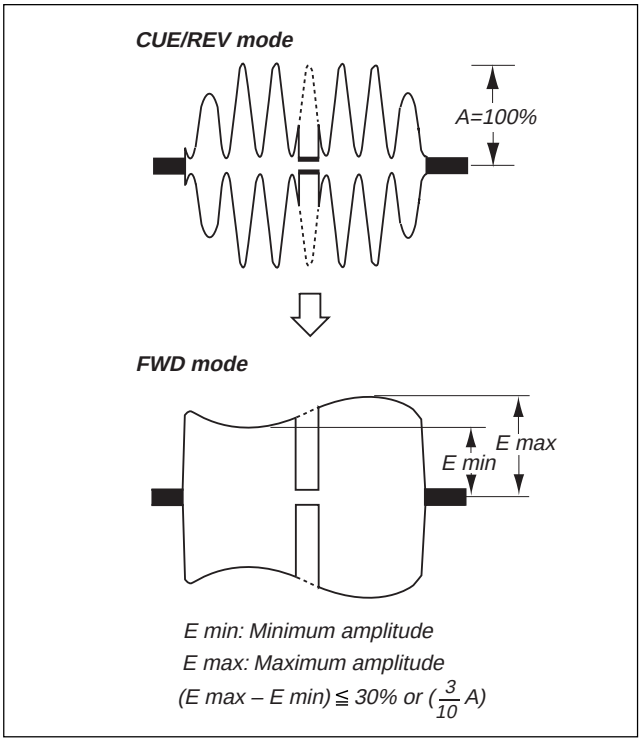


Fig. 4-11

4) Confirm that the RF waveform does not have excessive fluctuation of amplitude. (Fluctuation of amplitude should be 10% or less at both entrance side (B) and exit side (C), when taking the amplitude (A) in the CUE or REV mode as 100%)

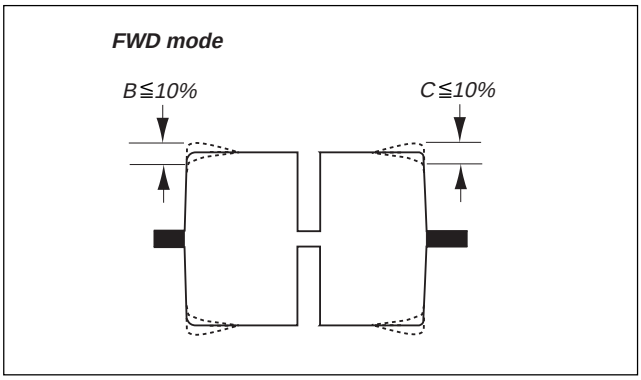


Fig. 4-12

2. CUE/REV Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Establish the CUE mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively, when taking the amplitude (A) in the CUE or REV mode as 100%.
3) Establish the REV mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively.

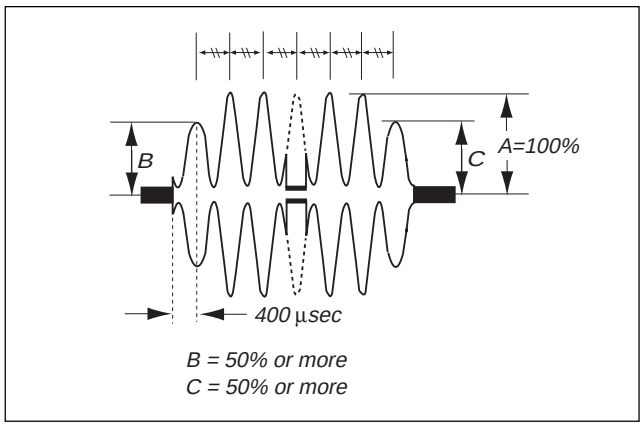


Fig. 4-13

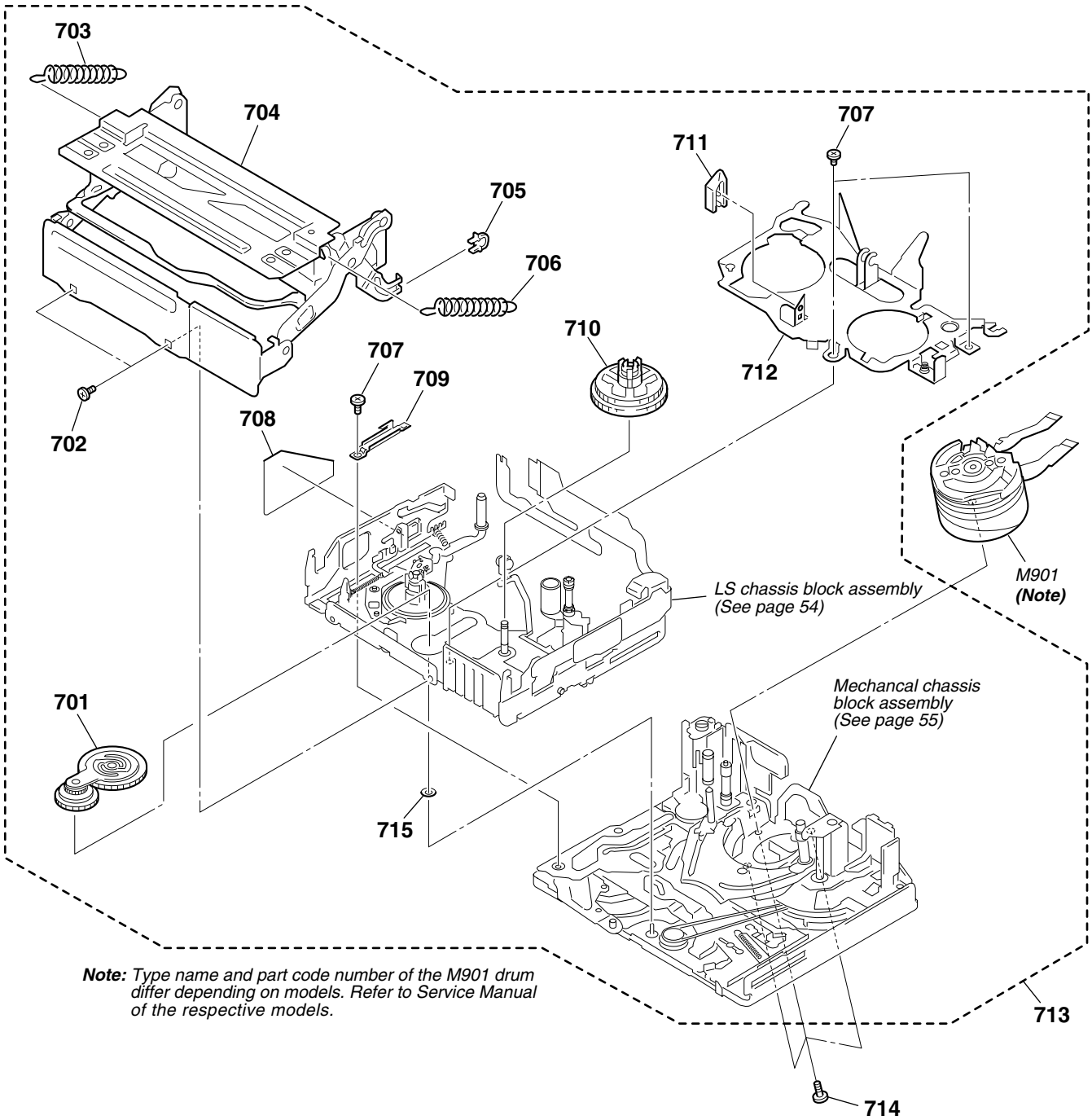
3. Rise-up Check

1) Play back the tracking alignment tape (XH 2-1) (Ref. No. J-5).
2) Change the modes from CUE mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from CUE mode to FWD.
3) Change the modes from REV mode (two seconds or more of REV and to the FWD within five seconds) to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from REV mode to FWD.
4) Change the modes from STOP mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from STOP mode to FWD.

5. Exploded Views

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

5-1. Overall Mechanism Deck Section (Z100)

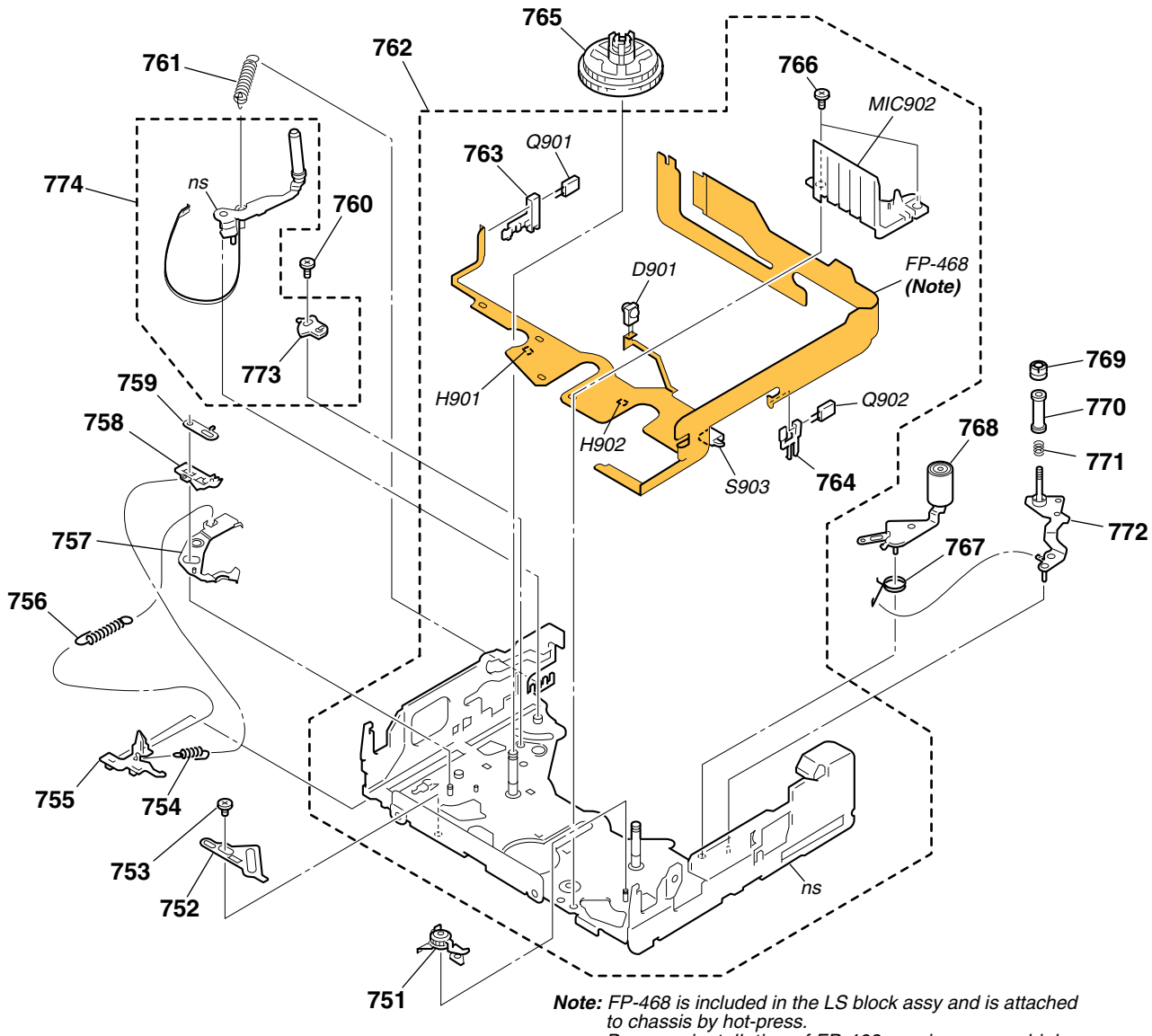


Note: *Type name and part code number of the M901 drum differ depending on models. Refer to Service Manual of the respective models.*

Ref. No.	Part No.	Description
701	X-3952-938-3	GEAR ASSY, GOOSENECK
702	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
703	3-079-206-02	SPRING (POP UP S), EXTENSION
704	X-3952-939-3	COMPARTMENT ASSY, CASSETTE
705	3-079-367-01	DAMPER, CASSETTE COMPARTMENT
706	3-079-215-02	SPRING (POP UP T), EXTENSION
707	3-703-816-15	SCREW (M1.4), SPECIAL HEAD
708	3-080-545-01	COVER, SENSOR S
709	3-079-364-01	RETAINER, LS GUIDE
710	X-3952-937-1	TABLE ASSY, T REEL
711	3-079-366-01	RELEASE, REEL LOCK
712	X-3953-257-1	PLATE ASSY, RETAINER
713	A-7095-393-A	MD (Z100) SUB ASSY
714	3-079-741-02	SCREW,DRUM FIXING
715	3-748-682-01	WASHER,T
M901	– Note –	DRUM (DEH-30A-R)(SERVICE)

5-2. LS Chassis Block Assembly

ns : not supplied



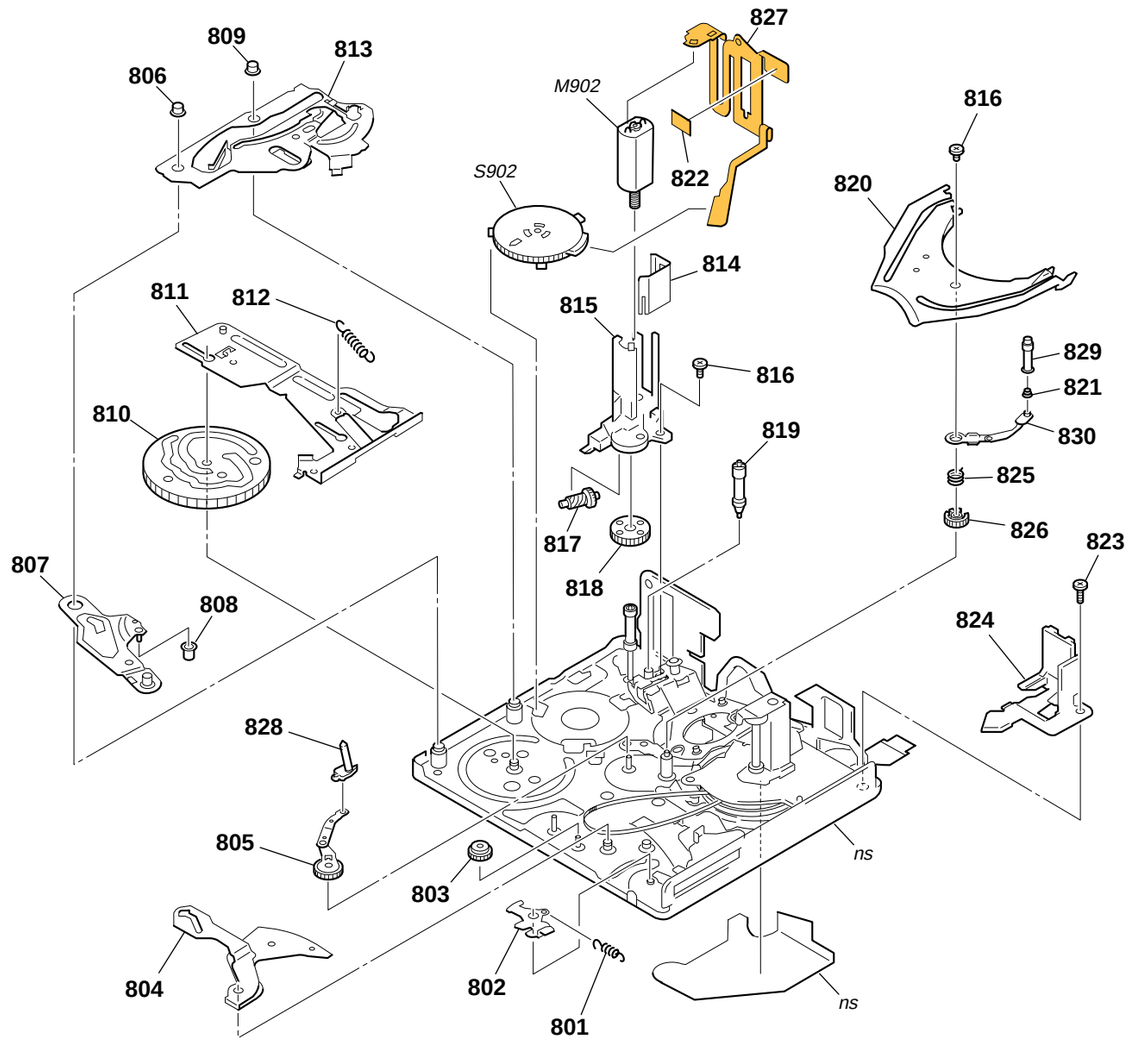
Note: *FP-468 is included in the LS block assy and is attached to chassis by hot-press.*
Because installation of FP-468 requires a very high accuracy, FP-468 is not supplied as an independent service parts.

Ref. No.	Part No.	Description
751	A-7095-402-B	BRAKE (T) BLOCK ASSY
752	3-079-241-01	PLATE, LS CAM
753	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
754	3-079-246-01	SPRING (RELEASE RACK),EXTENSION
755	3-079-248-01	POSITIONING (S), CASSETTE
756	3-079-244-01	SPRING (ULE), EXTENSION
757	X-3952-932-1	BRAKE ASSY, ULE
758	3-079-245-01	RACK (S), RELEASE
759	3-079-247-01	BRAKE (S)
760	3-059-090-11	SCREW (M1.4X2.5), SPECIAL HEAD
761	3-079-242-01	SPRING, TENSION (TENSION REGULATOR)
762	A-7095-401-A	LS BLOCK ASSY
763	3-079-267-01	HOLDER (S), SENSOR
764	3-079-268-01	HOLDER (T), SENSOR
765	X-3952-936-2	TABLE ASSY, S REEL

Ref. No.	Part No.	Description
766	3-703-816-15	SCREW (M1.4), SPECIAL HEAD
767	3-079-243-01	SPRING (PINCH RETURN), TORSION
768	X-3952-934-1	ARM ASSY, PINCH
769	3-052-062-02	NUT, TG7
770	3-079-219-02	TG7
771	3-081-591-01	SPRING, COMPRESSION (TG7)
772	X-3952-935-3	ARM ASSY, TG7
773	3-079-237-01	ADJUSTOR, BAND
774	A-7095-403-B	TG2 ARM BLOCK ASSY
D901	6-500-471-01	DIODE GL453E00000F (TAPE LED)
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)
MIC902	1-817-175-12	PIN, CONNECTOR (WITH DETECTION SWITCH)
S903	1-529-566-51	SWITCH, PUSH (1 KEY) (C.C. DOWN)
Q901	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE END)
Q902	6-550-402-01	TRANSISTOR PT4850FE000F (TAPE TOP)

5-3. Mechanical Chassis Block Assembly

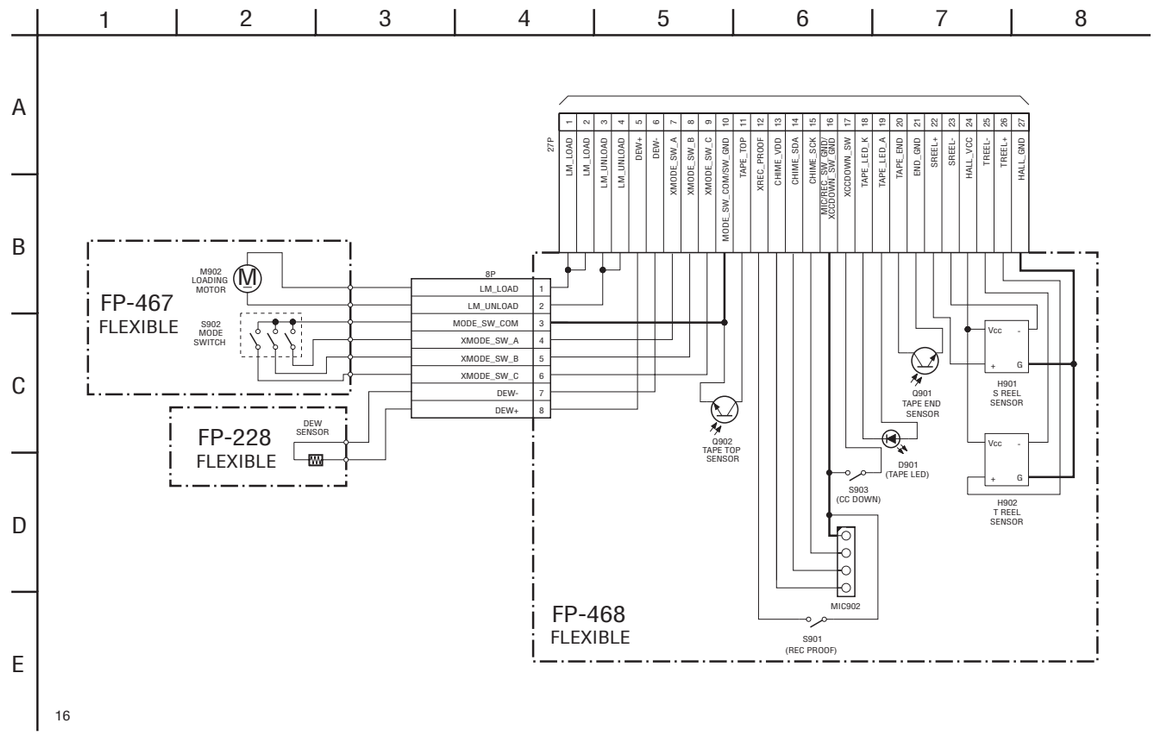
ns : not supplied



Ref. No.	Part No.	Description
801	3-079-314-01	SPRING (EJ), EXTENSION
802	3-079-327-01	ARM, EJ
803	3-079-323-02	GEAR, CONVERSION
804	3-079-324-02	ARM, GL DRIVING
805	X-3952-928-1	GL (S) ASSY
806	3-079-315-01	ROLLER (S1), LS GUIDE
807	X-3952-925-1	ARM ASSY, LS
808	3-079-320-01	ROLLER, LS
809	3-079-316-01	ROLLER (S2), LS GUIDE
810	3-079-319-01	GEAR, CAM
811	X-3952-941-1	SLIDER ASSY, M
812	3-079-321-02	SPRING (PINCH), EXTENSION
813	X-3952-940-2	PLATE ASSY, TG2 CAM
814	3-079-312-01	SHIELD, MOTOR
815	3-079-307-01	HOLDER, MOTOR
816	3-703-816-15	SCREW (M1.4), SPECIAL HEAD

Ref. No.	Part No.	Description
817	3-079-308-01	SHAFT, WORM
818	3-079-309-01	GEAR, DECELERATION
819	X-3952-942-2	ROLLER ASSY, TG3
820	3-079-325-01	RAIL, GUIDE
821	3-079-295-02	SPRING, TG5
822	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
823	3-079-328-01	SCREW ,SPECIAL (EG GRIP)
824	3-079-326-02	SUPPORT, TG7
825	3-079-301-01	SPRING (GLT), TORSION
826	3-079-298-01	GEAR (T), GL
827	1-686-798-11	FP-467 FLEXIBLE BOARD
828	X-3952-927-2	COASTER (S) ASSY
829	X-3952-930-3	ROLLER ASSY, TG5
830	X-3952-929-3	COASTER (T) ASSY
M902	A-7095-396-A	MOTOR BLOCK ASSY, L (LOADING)
S902	1-477-679-11	ROTARY, ENCODER (SWITCH)

6. Schematic Diagrams



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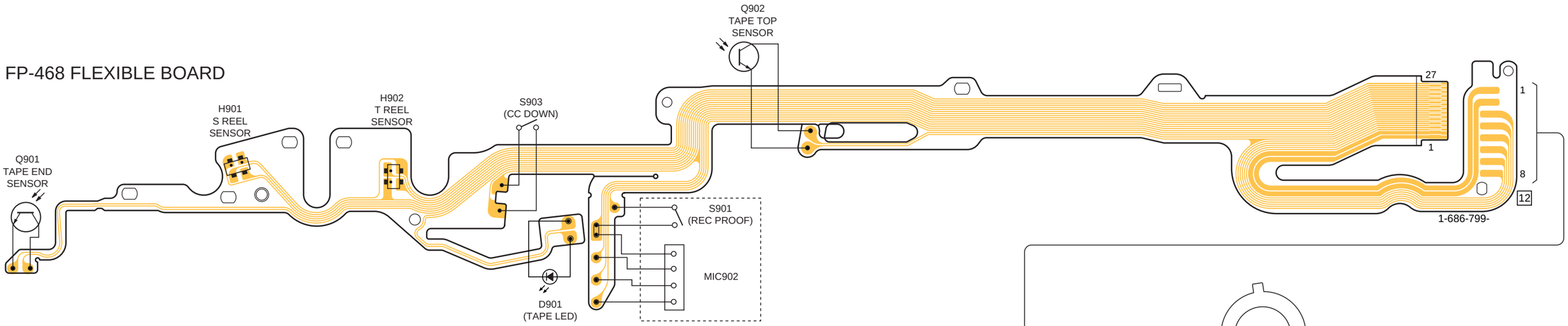
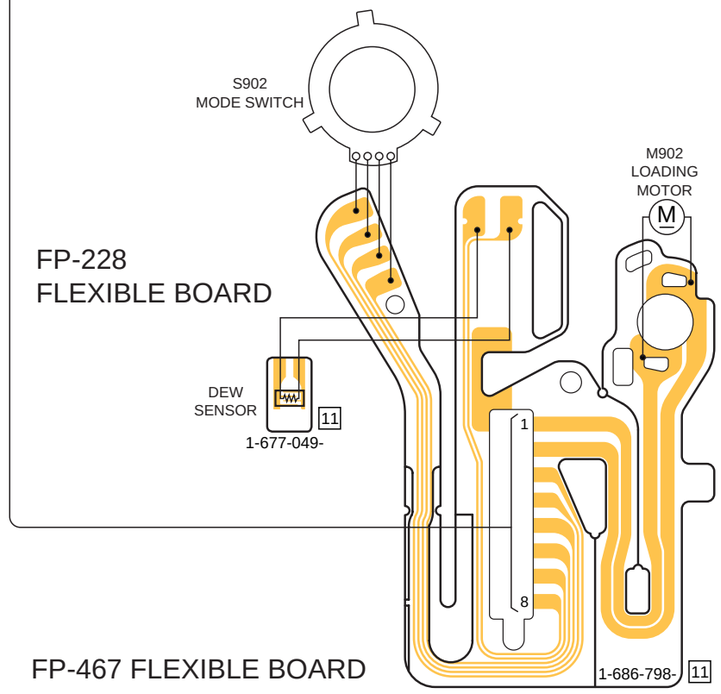
7. Printed Wiring Boards





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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.01	Official Release	—	—